AMERICAN Railroad Journal

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Railroad Notes.

WE invite railroad officers to send us notice of elections, transfers, appointments, resignations, etc.; and all our readers would oblige us by furnishing us with any items of news which may come to their knowledge and are of a suitable nature for our columns. It is our intention to publish monthly full and accurate information regarding those enterprises and industries to which the AMERICAN RAILROAD JOURNAL is devoted, and to effect this end we solicit the coöperation of readers interested therein. We aim specially to record all new railway enterprises in the United States and Canada, and to note the progress of construction on all new roads and extensions; and we request those concerned in railway building to give us early information concerning the above, that our reports may be as complete as possible.

FINANCIAL AND STATISTICAL.

THE following railroad reports for the year ending September 30, 1883, have been filed with the New York Railroad Commissioner:

NEW YORK, WEST SHORE AND BUFFALO.

Capital stock		$40,000,000
Capital subscribed and paid in		35,455,400
Funded debt		43,036,000
Unfunded debt		
Construction and equipment		78,612,945
Earnings:		
Passengers	$76,725	
Freight	11,493	
Rents	250,000	
Express	3,387	
Miscellaneous	6,005	$347,610
Charges for transportation	$98,457	
State taxes	8	
Interest on bonds	250,000	$348,461
Deficiency for year		$855

Passengers carried, 136,646; tons of freight, 10,951; persons killed, 9; injured, 4.

NEW YORK, ONTARIO AND WESTERN.

Capital stock		$65,000,000
Capital stock paid in and issued		60,113,983
Unfunded debt		2,311,899
Total cost of road and equipment		52,856,017
Total earnings	$1,357,777	
Charges against earnings	1,434,428	
Deficiency for the year	$76,651	

Passengers carried, 546,803; tons of freight moved, 562,836; persons killed, 15; injured, 43.

The Fall Brook Coal Company, operated and reported by the Corning, Cowansque and Antrim Railroad Company: Earnings, $650,829; disbursements, $677,678; deficiency, $26,848.

The Hartford, Connecticut and Western Railroad Company: Earnings, $394,411; disbursements, $384,582; surplus, $9,829.

The Ogdensburg and Lake Champlain Railroad Company: Earnings, $638,277; disbursements, $628,642; surplus, $9,635.

DIVIDENDS have been declared as follows: Lake Shore and Michigan Southern, two per cent., (quarterly); Canada Southern, two per cent. (semi-annual), and Michigan Central, three per cent., (semi-annual). These are payable on the first of February. The Lake Shore and Michigan Southern Company reports gross earnings of $18,550,000, an increase of $324,361 over 1882. Operating expenses and taxes, amounting to $10,975,000, show a decrease of $82,807 over last year, the net earnings being $7,575,000, an increase of $407,168, and the percentage of earnings 59.17. For interest, rentals, and dividends on guaranteed stock was paid $3,550,000, leaving a balance of $4,025,000, or $8.14 per share. From this $3,957,320 was paid for dividends, leaving a surplus of $67,680, which is $115,832 less than the surplus of last year. The gross earnings of the Michigan Central and Canada Southern, were $14,000,000, of which $4,300,000 were net earnings. The operating expenses were 69.28 per cent. of the gross earnings, or $9,700,000. There was paid for interest and rentals $2,475,000, leaving a balance of $1,825,000. Of this the Michigan Central received $1,216.667, and the Canada Southern $608,333. This in the case of the former amounted to $6.49 per share, and in the latter $4.05. After the payment of dividends the Michigan Central had a surplus of $92,375, and the Canada Southern one of $8,333.

AT the recent annual meeting of the stockholders of the Richmond and Danville Railroad Company, held at Richmond, Virginia, on December 12, president A. S. Buford's report showed the earnings from all sources to be $3,805,791, and the expenses of maintenance and operations $2,218,853, leaving the net earnings $1,586,937. The total net revenue for the year was shown to be $1,605,256. The total interest on the funded and floating debt, including interest on debentures and rentals of leased lines for the year, was $1,492,700, which gives a balance of net revenue over all charges of $112,556. The increase in the gross earnings over those of last year was $154,718, and the decrease in operating expenses $134,184, showing an increase in net earnings over last year of $288,902. The total indebtedness of the company was stated, in round numbers, at nearly $10,000,000, against which was to be credited in valuable properties over $6,000,000.

THE New York, West Shore and Buffalo Railroad Company has applied to the New York Stock Exchange for the quotation of $14,750,000 of its first mortgage bonds, not now listed, the quotation to include such registered certificates as coupon bonds may be converted into. The $14,750,000 is the remainder of the issue of $50,000,000 of five per cent. bonds. Application has been made by the Gulf, Colorado and Santa Fé Railroad Company to have $384,000 of its first mortgage bonds listed by the Stock Exchange. These bonds have been issued in payment of thirty-two miles of road which has been completed at a cost of $12,000 a mile.

THE gross earnings of the New York Central and Hudson River Railroad, for the year ending September 30, 1883, were $33,770,721.82, the largest in its history. They exceed the gross earnings of 1882 by $3,141,940.44. The total expenses for the year were $20,750,594.03, the net earnings being therefore $13,920,127.79. The stock and debt of the company, as compared with last year, is given as follows:

	1882.	1883.
Capital stock	$89,428,300 00	$89,428,300 00
Funded debt	48,473,033 33	49,997,233 33
Unfunded debt	5,254,369 93	4,689,242 71
Total funded and unfunded debt	53,727,403 26	54,686,476 04

THE earnings of the Oregon Improvement Company, owning and operating the Pacific Coast Steamship Company, the Pacific Coast Railway Company, the Columbia and Puget Sound Railway Company, and the Seattle Coal and Transportation Company for the fiscal year ending Nov. 30, 1883, were: December 1, 1882, to October 31, 1883, gross $3,705,109, net $1,194,124; November, 1883, gross $384,247, net $152,738; total, gross $4,089,356, net $1,346,862; total 1882, gross $3,361,277, net $1,095,664; November, 1882, gross $340,058, net $90,554.

THE stockholders of the Buffalo, New York and Philadelphia Railroad Company have approved a proposition of the board of directors to increase the funded indebtedness of the company to the total authorized issue of $25,000,000. The original issue of bonds was $21,000,000, and subsequently $1,700,000 were sold for new cars and engines, stations, sidings, and advances to develop coal properties. The increase recently authorized is $2,000,000, which is to be devoted to additional equipment and facilities demanded by the growing business of the road.

THE annual report of the Massachusetts Railroad Commissioners was submitted to the legislature, January 7. During the year ending Sept. 30, 1883, there were 3,798 additional miles of railroad constructed in this State. The aggregate capital stock was $122,367,572. The net debt of the companies amounts to $72,933,290. The total gross income for the year was $43,380,387; total expenses, $32,479,907. The local passenger earnings were $13,652,320; through passenger earnings, $5,245,265. The total number of passengers carried was 61,530,747. The whole number of tons of freight carried was 20,202,881.

BY a decision of the Supreme Court of Pennsylvania, in the case of the City of Pittsburgh against the Pennsylvania Railroad, the Pennsylvania Company, and various railway corporations, the city recovers $263,000 delinquent taxes. The property which has thus been decided subject to taxation will hereafter yield an annual revenue to the city, of $90,000. The amount due from the Pennsylvania Railroad Company is $177,000.

THE annual report of the Long Island Railroad shows that the total earnings were $2,685,090, and the transportation expenditures $1,683,814.33. During the year the road was greatly improved. The sum of $368,770.13 was expended for new rolling stock. The total amount expended for improvements was $983,924.18. During the past two years the improvements cost $2,675,525.96.

THE gross earnings of the Northern Central Railway Company for November were $536,094; expenses, $370,387, and net earnings, $165,707, being an increase, as compared with November, 1882, of $17,576. The net earnings for the eleven months of 1883 were $2,237,145, being a gain, as compared with the corresponding period of 1882, of $307,980.

THE statement of coal tonnage of the Philadelphia and Reading Railroad Company for the fiscal year ending Nov. 30, gives the total as 11,449,373 tons, an increase of 3,019,547 tons compared with the previous years. About $4,500,000 of the $5,000,000 of the Lehigh Coal and Navigation Companies' first mortgage loan had been extended by the middle of December.

RAILWAY foreclosures in 1883 covered eighteen lines, 1,354 miles of track, $18,825,000 capital stock, and approximately, $28,505,000 bond and debt. The total capital invested (stock, bonds, and debt) was $47,330,000, against $65,426,000 on foreclosed roads in 1882, $127,823,000 in 1881, and $263,882,000 in 1880.

THE board of directors of the Lehigh Valley Railroad Company has increased the capital stock of the company outstanding twenty per cent., giving stockholders the privilege of subscribing to the new stock at par in the proportion of one share for five held by them. This increase of capital amounts to $5,526,639.

THE directors of the Oregon Railway and Navigation Company have voted to reduce the annual dividend for 1884 from ten to eight per cent. The first quarterly dividend of two per cent. has been officially declared, and will be paid Feb. 1.

THE Federal government has agreed to pay the government of Nova Scotia $1,200,000 for the Eastern Extension Railway, running from New Glasgow to Canso, the local government to relinquish its claim to the Pictou branch.

THE aggregate earnings of the Chicago, Milwaukee and St. Paul Railroad for the year ending Dec. 31, 1883, were $23,660,000, against $20,385,000 for 1882, an increase of $3,275,000. The earnings for 1881 were $17,025,461.66.

AT the annual meeting of the Virginia Midland Railway, held at Alexandria on the nineteenth of December, president Barbour reported the gross earnings for the year to have been $1,664,304; operating expenses, $956,194.

THE annual report of the Boston, Hoosac Tunnel and Western Railroad shows the total earnings for the past fiscal year to be $368,245.40; disbursements (for transportation expenses), $388,922.98; deficiency, $21,637.88.

DURING the last year 6,600 miles of new track were laid in the United States, costing about $165,000,000. There are about 120,000 miles of track in the United States. In 1882, 11,600 miles were laid, and 9,800 in 1881.

THE Pennsylvania Railroad Company has purchased the

Eastern Shore Railroad at a price approximating $450,000. The Eastern Shore Road runs from Delmar, Del., to Crisfield, Md., a distance of thirty-eight miles.

THE earnings of the Union Pacific Railway for the eleven months ended Nov. 30, 1883, were $27,353,779—a decrease of $451,242. The expenses were $14,939,282—an increase of $242,554.

THE directors of the Bald Eagle Valley Railroad Company have declared the regular semi-annual dividend of four per cent., and an extra dividend of one per cent., payable on February 1.

THE Nantasket Beach Railroad was sold at auction in Boston on the seventh of January, for one hundred thousand dollars, to satisfy the claims of its bondholders.

THE Trunk Line Commissioner, Mr. Fink, has made the reduction of east bound freight rates on grain from thirty cents to twenty cents per one hundred pounds.

THE officers of the Oregon Transcontinental Company have made an arrangement for a loan of $8,000,000 with which to wipe out its floating debt.

THE Central Pacific Railroad Company has declared a semi-annual dividend of three per cent., payable Feb. 1.

ELECTIONS.

AT the annual meeting of the stockholders of the Baltimore and Philadelphia Railroad Company held at Washington, on December 11, the following board of directors was chosen; James B. Washington and William S. Bissell, of Allegheny City; Thomas W. King and Harry S. Burgesser, of Pittsburg; Robert Garrett, of Baltimore, and William M. Canby, William Canby, and Victor Dupont, of Wilmington. The directors elected James B. Washington, president; Robert Garrett, vice-president; John C. Farrar, secretary, and William H. Ijams, treasurer.

THE following are the directors of the Pittsburg and Connellsville Railroad: Robert Garrett, Mendes Cohen, Hugh Sisson, and Charles Webb, of Baltimore; W. S. Bissell, John D. Scully, George A. Berry, and C. S. Fitzhugh, of Pittsburg: William Baldwin, of Connellsville, Pennsylvania; W. H. Markle, of Greensburg, Pennsylvania; W. H. Koontz, of Somerset, Pennsylvania, and C. C. Markle, of West Newton, Pennsylvania. The board was organized and Robert Garrett elected president, and J. B. Washington, secretary, treasurer and auditor.

AT the annual meeting of the stockholders of the New Haven and Northampton Railroad Company, January 2, the following directors were reëlected: Charles N. Yeamans, Westfield, Mass.; George J. Brush and Daniel Trowbridge, New Haven; Horatio G. Knight, Easthampton, Mass.; George H. Watrous, New Haven; William D. Bishop, Bridgeport; Charles M. Pond, Hartford; Ezekiel H. Trowbridge and Edward M. Reed, New Haven. Mr. Yeamans was reëlected president, and Edward A. Ray secretary and treasurer.

THE newly elected directors of the New York, West Shore and Buffalo Railroad Company, are: Horace Porter, George M. Pullman, H. Victor Newcomb, John J. McCook, Charles F. Woerishoffer, Frederick Billings, Edward D. Adams, John W. Ellis, Theodore Houston, Henry K. McKarg, Elmer L. Corthell, of New York; Peter B. McLennan, of Syracuse; John B. Kerr, of Newburgh. The retiring members of the old board were Henry Villard, Charles Lanier, Charles Paine and R. T. Wilson.

AT a meeting of the stockholders of the North River Construction Company, which is building the New York, West Shore and Buffalo Railway, the following directors were elected: Edward F. Winslow, Charles Freeman Smith, Michael P. Grace, Thomas W. Lillie, Walter Katte, Howard Mansfield and George G. Nevers, of New York; Conrad N. Jordon, of Englewood, New Jersey, and Charles Bard, of Norwich, Connecticut.

AT the annual meeting of the Norwich and Worcester Railroad Company the following were elected directors: F. H. Dewey, Edward L. Davis, Thomas B. Eaton, Samuel Woodward and Josiah H. Clark, of Worcester; John F. Slater and Lorenzo Blackstone, of Norwich; William Bayard Cutting, of New York; William G. Weld, of Newport, and James H. Beal, of Boston. F. H. Dewey was reëlected president.

THE incorporation of the Lake Erie and Mississippi Railway Company was effected at Springfield, Illinois, on the seventh of January, with Columbus B. Cummings, George A. Ives, John B. Cohoes, and Luther M. Dearborn as incorporators, and who constitute the first board of directors. The company is formed to construct a road from Bloomington to Peoria, Ill., and thence westward to the Mississippi.

THE stockholders of the New York, New Haven and Hartford Railroad Company, have reëlected the old board of directors as follows: George H. Watrous, E. M. Reed, William D. Bishop, Wilson G. Hunt, George N. Miller, A. R. Van Nest, Henry C. Robinson, E. H. Trowbridge, Nathaniel Wheeler, C. M. Pond, Augustus Schell, William H. Vanderbilt, Charles P. Clark.

AT the annual meeting of the Wheeling and Lake Erie Railroad Company held at Toledo, 74,000 shares were represented. N. H. Swayne, of Toledo, Melvin C. Day and Arthur Levy, of New York, and W. L. Sutherland, of Ohio, were elected to fill vacancies in the board of directors.

AT the annual meeting of the stockholders of the Columbus, Hocking Valley and Toledo Railroad, the old board of directors was reëlected, with the exception of J. W. Ellis, of New York, resigned, whose place was filled by J. H. Wade, of Cleveland. The board reëlected the old officers.

PERSONAL.

AT the meeting of the directors of the Baltimore and Ohio Railroad Company on December 12, after the unanimous election of Mr. John W. Garrett, as president of the road for the twenty-sixth consecutive term, that gentleman made a brief address, in which he said: "when I became your executive in 1858 the length of the roads under your control was but 514 miles, and their cost $32,000,000. Now the properties owned and controlled by the Baltimore and Ohio Company aggregate 1,995 miles and cost more than $134,000,000. When the Baltimore and Ohio Railroad was incorporated in 1827, the then novel and stupendous enterprise was undertaken by our great pre-

decessors, of building a railway to unite the waters of the Chesapeake with those of the Ohio, it being then believed that the whole capital required to construct and equip the line would be but $3,000,000, and that sum was fixed in the charter for this work. At the close of the first fiscal year of the present administration, the 30th of September, 1859, the aggregate revenues were $4,301,009.27; for the past fiscal year they have been nearly $20,000,000.

J. D. LAYNG has been appointed general manager of the New York, West Shore and Buffalo, and New York, Ontario and Western Railway companies, and the Wallkill Valley Railroad Company, in consequence of the resignation of Charles Paine, necessitated by his ill-health. Mr. Layng's appointment dates from January 1.

JUDGE GEORGE W. MCCRARY, of the Eighth United States Judicial Circuit, has forwarded his resignation to the president to take effect March 1. He has contracted with the Atchison, Topeka & Santa Fé Railroad, to fill the position of general counselor for five years, with headquarters at Kansas City.

C. C. LAMBERT has been appointed General Western passenger agent of the New York, West Shore and Buffalo Railway, with headquarters at Chicago. Mr. Lambert heretofore represented the Troy and Boston and Fitchburg Railroads in a similar capacity.

TICKET-AGENT A. D. Sheldon, of the "Big J." road has resigned the position, after twenty years of service.

PRESIDENT GOWEN, president of the Philadelphia and Reading Company, will go to Europe shortly.

CONSTRUCTION.

ARTICLES of agreement have been filed in the State Department for the merging of the Seaboard, Pittsburgh and Great Western Railroad Company, and the Delaware, Water Gap and Southwestern Railroad Company. The line of the former company extends from Greene Village, Franklin county, to a point in Allegheny county, west of Pittsburgh, a distance of 210 miles, and the latter from a point in Bedford county to Smithfield, Monroe county, near Delaware Water Gap, a distance of 255 miles. The name of the new company will be the Seaboard, Pennsylvania and Western Railroad Company, with the main office in Philadelphia. Its officers will be Robert M. Janney, of Philadelphia, president; S. E. Heasley, of Brooklyn, treasurer; C. M. Stabler, of Springfield, N. J., secretary. The capital of the company is $11,500,000.

THE Harlem River Railroad Company has filed its plans with the secretary of state at Albany and the register of New York. It has a capital of $2,000,000, and proposes to build a line of road extending from Woodlawn, the junction of the New York, New Haven and Hartford and the Harlem Railroads, to a point on the Harlem River at the northern end of High Bridge, connecting with the New York Central, the New York City and Northern, and the elevated roads at the Third and Eighth avenue bridges. The company has acquired ample dock and tunnel facilities where it can easily handle heavy freights. The officers are: John H. Cheever, president; William Ryder, vice-president; C. A. Cheever, secretary, and G. E. Harding, chief engineer.

THE Mayor of Chicago has, in accordance with an order of the city council made a year or more ago, completed negotiations for the sale to the Illinois Central and Michigan Central Roads, all that portion of the lake front between Randolph and Monroe streets east of the east line of Michigan avenue, and to within one inch of the lake shore, with the provision that this inch be leased at a nominal sum to the roads for 999 years, with the privilege of renewal, for $800,000.

PRESIDENT George Stephen of the Canadian Pacific says there will soon remain to be constructed of its 2,906 miles of main line only two gaps, one less than three hundred miles on the Pacific side of the Rocky Mountains, and one of four hundred and thirty miles north of the lakes. It is expected that both of these will be filled in the next two years, and that the needful will be forthcoming.

A NEW railroad was organized in Minneapolis, to be known as the Lake Traverse, Sanborn and Carrington Railroad. It will run from the northern end of Lake Traverse, on the boundary line between Minnesota and Dakota, northwest, crossing the Northern Pacific Railroad at Sanborn, and reaching Carrington, in Foster county, Dakota, a distance of 175 miles.

THE New York Central and Hudson River Railroad Company has agreed to transfer Wagner cars between Troy and Albany, for the Troy and Boston Railroad. The latter road proposes to run Wagner cars through between Albany and Boston, and is only awaiting the action of the Fitchburg Road with reference to taking the cars before beginning operations.

A CHARTER has been granted to the Pittsburgh and Allegheny Central Railroad, with a capital of $1,200,000, to run from Chartier's Creek, Allegheny county, to a point near New Salem, Westmoreland county, a distance of forty miles. James S. Negley is the president, and the main office will be in Pittsburgh.

THE proposed Thames River bridge will cross the river at Winthrop's Neck, and its eastern terminus will be just north of the village of Groton. The consolidated railroad —the New York, New Haven and Hartford, and the Stonington and Providence Company—is reported to be actively forwarding the enterprise.

THE twenty-year-old lease of the Pullman Palace Car Company to the Pennsylvania Railroad Company will expire shortly, and in view of this fact the latter company is making arrangements to construct elegant cars at Altoona for its own use.

THE Philadelphia and Reading Railroad Company has put engineers to work surveying lines within the borough limits of Pottsville, for a connecting line between the main line at that place and the Schuylkill Valley Road at Palo Alto.

CONTRACTORS are at work on the extension of the Hempfield, Baltimore and Ohio Railroad between Washington and Connellsville.

PEOPLE on Manhattan Island living north of 135th street are agitating for rapid transit to and from the lower part of New York city.

IT has been decided not to begin work on the Pennsylvania, Slatington and New England Railroad until the opening of spring.

MISCELLANEOUS.

THE North River Construction Company, which built the New York, West Shore and Buffalo Railway, was put in the hands of a receiver on the twelfth of January, on the application of Valentine L. Lary, the president of the New Jersey and New York Railroad, who is a member of the firm of Ward, Mackin & Co., contractors for work on the road. Chancellor Runyon, of Newark, New Jersey, appointed Judge Ashbel Green, of Tenafly, a member of the law firm of Alexander & Green, of New York, the receiver. The Construction Company was incorporated under the laws of New Jersey in January, 1881. Its capital of $500,000 was increased to $10,000,000, all paid in, when it began work on the West Shore Road, the following March.

COMMISSIONER FINK, by authority of the railroads he represents, has informed Samuel Sloan, president of the Delaware, Lackawanna and Western, that unless the road maintains the pool rates and stops making time contracts at reduced rates and within a certain period, the roads west of Buffalo will stop receiving or delivering through freight to it. This would prevent the Lackawanna from issuing through bills of lading or sending through cars beyond its own line. It would have to break bulk at Buffalo. Besides, it would have to pay local rates for freight sent by it over connecting lines. The specific charge made against the Lackawanna is that it gave a discount of twenty per cent. on its freight bills to shippers.

MAYOR LOW, Brooklyn, has signed the resolutions of the Board of Aldermen giving to the Kings County Elevated Railroad Company the authority to commence proceedings for the erection of their proposed lines. The street car provisions are wofully deficient in the city across the East River.

JUDGE BLANDIN, of the Common Pleas Court, Cleveland, Ohio, has granted a perpetual injunction, asked by Scofield, Shumer & Teagle, against the Lake Shore and Michigan Southern Road, preventing the defendants making a discrimination in freights in favor of the Standard Oil Company.

THE appointment of a receiver of the New York and New England Railroad was a prominent event of the new year. At a meeting of the directors held in Boston on January 7, it was decided that the receivership be continued in force, to be terminated within four months from that date.

THE Chicago, Burlington and Quincy Railroad Company has declined to enter into the new Western railway alliance on the terms accepted by the four other Iowa roads. The proposition advanced to it was that it should join the new pool on the same terms as the Northwestern.

A SUIT is in progress in Judge Depue's court at Newark, New Jersey, involving the title to a large patch of the shore front at Communipaw. The parties are the West Line Railroad Company and the New Jersey Centrail.

THE oil trains over the Lehigh Valley are controlled by the Green Line Freight Company, and amount to 175 cars per day. The cars are delivered to the Pennsylvania Railroad Company at Metuchen.

THE Reading Railroad Company has given an order to the Baldwin Locomotive Works for thirty engines of various kinds, to be completed in the coming spring.

THE Nickel Plate fast through freight line on the New York, Chicago and St. Louis, began operations January 1. Charles Tappen, Rochester, is general manager.

THE Carlisle Car Works are building a lot of freight cars for the Cumberland Valley Railroad of forty thousand pounds capacity each.

THE Northern Central Railway Company has ordered the construction of one thousand coal cars, to be used in the Shamokin region.

The New York Elevated Railroads.

THE following are the reports for the year ended September 30, 1883:

MANHATTAN ELEVATED RAILROAD.

	1882.	1883.
Capital stock	$26,000,000	$26,000,000
Subscribed and paid in	19,005,700	19,150,700
Unfunded debt	1,596,302	1,134,617
Earnings:		
Passengers		$6,345,258
Mails		5,000
News privileges		9,000
Interest		4,642
Sale of old scrap, etc		22,604
Total		$6,386,505
Expenditures:		
Transportation		$3,756,827
Dividends		390,000
Rental of leased lines		1,384,080
Total		$5,530,907
Surplus for the year		855,597
Surplus Sept. 30, 1882		362,458
Passengers carried		92,124,943

	1882.	1883.
Capital	$10,000,000	$10,000,000
Subscribed and paid in	6,500,000	6,500,000
Funded debt	8,500,000	8,500,000
Unfunded debt	51,336	85,463
Total cost of road and equipment	14,918,682	14,572,250

The sum of $346,432 has been taken out of construction and added to profit and loss. In addition to the sum of $14,572,250, the Manhattan Company expended upon the lines of the company to Sept. 30, $609,473, making $15,182,724; earnings from rent, $10,000; paid for legal services, $8.605; paid for miscellaneous, $1,175; surplus for year, $1,818; surplus Oct. 1, 1882, $207,981.

METROPOLITAN ELEVATED RAILROAD.

	1882.	1883.
Capital	$6,500,000	$6,500,000
Funded debt	12,818,000	12,818,000

Earnings from rents, $10,000; paid for specific purposes, including $13,-181 for legal expenses, $19,159.

Vandalia Railroad Company.

THE gross earnings of the Vandalia Railroad Company for the year 1883, are $1,700,954; the expenses, $1,306,067; the net earnings, $394,887. The rental from the lessees is $510,286; from which deduct the interest on the bonds, $314,930, and the amount paid for taxes, etc., $42,981, which leaves a surplus for the year of $152,375. The expense account includes $115,634 for betterments. The following are the newly-elected directors: Thomas D. Messler, William Shaw, John N. McCullough, W. R. McKeen, R. L. DuLaney, Abraham McNeill, A. G. Henry, Charles H. Seybt, and J. S. Peers. The board elected Thomas D. Messler, president; John E. Davidson, treasurer, and Williamson Plant, secretary.

CHINA has only seven miles of railroad.

AMERICAN Railroad Journal

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NEW YORK, JANUARY, 1884.

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HENRY VILLARD.

THE last time Mr. Villard's name was prominently mentioned in these columns, as far as the general public knew, he had attained prosperity and honors which promised to be abiding. It was with a shock of surprise that on the eighteenth of December last, the intelligence was received of his surrender of his great office as president of the Oregon Transcontinental Company, and of the Oregon Railway and Navigation Company. When the further announcement was made, that he had also resigned the presidency of the Northern Pacific, the prevailing feeling was sympathy for a man who had risen so high to fall so low; and this feeling was intensified by the necessity of his deeding his house to pay a debt of $340,000 to the Oregon Railway and Navigation Company. Thus broken in fortune, and as report says, shattered in health, there seems nothing to relieve the severity of his fall, except in the record of great accomplishments, in the unassailability of his good name, the not ungenerous provision voted for his financial relief by the Northern Pacific upon the occasion of its acceptance of his resignation of its presidency, and the public admiration of his ability and probity, which will assist the effect of his renewed energies when, happily, the time shall come for his resumption of great responsibilities.

A knowledge of Mr. Villard's career is possessed by every reader of this magazine. His dazzling reputation originated at the time of his being appointed the agent of European holders of the securities of transportation companies doing business in the northwest. While thus engaged he formed plans looking to the control of the transportation business concerning the vast extent of country watered by the Willamette and Columbia. The development of these plans resulted in his control of the Oregon and California Railroad Company, the Oregon Steamship Company, and the Oregon Steam Navigation Company, which interests were, under his forming hand, in the course of time, made parts of the Oregon Railway and Navigation Company, a creature of his genius for great enterprises. His master stroke, however, was the conversion of the Northern Pacific Railroad Company, from a competitor into an ally and friend of the Railway and Navigation Company. This was effected by the formation of the "blind pool" of 1881, whereby eight million dollars were raised as a purchasing fund. The Oregon and Transcontinental Company was the result of the transactions thus developed, consolidating the interests of the Northern Pacific and the Oregon companies. While carrying out these projects of colossal magnitude, Mr. Villard found time for important concerns of great but less importance; and the wonder grows how one man could accomplish so much.

Shrinkage in the values of the Villard securities wrought

the downfall of their originator. As to the immediate causes of this shrinkage, these may never be known fully, nor how far Mr. Villard is responsible for them. Possibly in this instance of the decline and fall of a brilliant man, an astuter mind than his has accomplished his downfall.

Mr. Villard's career is historic. What he accomplished is great and will prove of invaluable service to his fellow-citizens, a service which will be remembered gratefully and admiringly in the pages which record the matchless development of American commercial progress.

THE RAILWAY PROBLEM.

IN the January number of the *Princeton Review*, is an article by C. Stuart Patterson, on the above subject. We have read the article with some degree of pleasure, because from beginning to end we have noticed a disposition to be fair-minded, and to acknowledge that the railroads have some rights which must be respected.

The question of freight rates probably gives as much trouble as any other question which arises between the management of a railroad and the people; but who shall determine this question so that justice shall be meted out to both sides? As Mr. Patterson rightly states the matter: It costs a railroad more to haul freight on an up grade than on a level surface; more to pull it through a tunnel than on a long stretch of easily built road-bed. It costs a road more to carry freight for short distances than long, because the same amount of labor is necessary to load and unload in both cases, and the wear and tear of stopping and starting a train must be taken into account as well. Now these are only a few of the difficulties under which a railroad management labors in making a proper tariff for freight transportation, and we do not see how a railroad commission is to help matters unless all these items are taken into account, and a larger pro-rata given to those roads whose cost of hauling is in excess of other roads. When this is done, other evils will creep in, such as roads abandoning their connections and doing business on their own terms independent of the others. Roads which are used by large shippers will naturally break rates to retain their large customers, and with some show of justice. It is a principle well established in business that a certain discount should be made for quantity which would not be allowed for lesser amounts. A man buying a shirt does not expect to get one for less than a dollar fifty, but if he buys a dozen he expects to get them for fifteen dollars. We confess ourselves puzzled as to how an equitable tariff can be framed by a commission for all railroads, taking all these questions into account, and meting out exact justice to all. We do not think the man is born who can do it successfully.

For ourselves, we see but one solution to the railway problem, and that is to look upon the railways and to treat them the same as we do all other branches of business. We do not think of a commission for dry goods merchants, grocers, hardware men, and others. We let them cut and slash if they will, and we take advantage of their competition and buy of the one who will sell the cheapest. Some of them succeed, and some lose their money and go to the wall. So must it be with railroads. Let them cut and slash and compete with each other as much as they want. Let the stockholders lose their money. They might just as well lose it in railroad competition as in any other competition. The men who will buy stock in a railroad having no present value in hope of realizing in the future, have rightly no more fault to find if they lose, than they would have if they had bought anything else for a rise. Parties, if they chose, had a right to build the West Shore Road and give fifty millions worth of their bonds for twenty-five millions' worth of labor, in the hope that when the road was completed its business would warrant such a proceeding; but if the business does not come in and the road goes into the hands of a receiver, and the stockholders lose all, what of it? They took the risk, and if successful, would pocket the gain. Let them pocket the loss.

Just so with all railroads and everything else of a business nature. They who risk to make great gains, must also count on making great losses. It is the survival of the fittest. The only solution to the railway problem is to let the railroads alone.

THE present issue contains the first of a series of papers reviewing the earliest volumes of this journal. Dating back half a century, more or less, it is believed that the information which the compiler will dig out of these, the earliest productions in railroad periodical literature, will be found to be of a very interesting character. In the first of his articles, to which we respectfully direct the attention of readers, our contributor has pleasantly prepared the way for succeeding papers, each one of which will, of course, deal with a much wider scope of material than the first and introductory installment. We are quite sure that no person can read this without enjoying it and having an appetite for more of the same quality. Hence we assure ourselves that the fluent and graceful pen of the writer specially engaged to review the first volumes of the AMERICAN RAILROAD JOURNAL, will, by reason of this engagement, find a large and appreciative class of readers among those gentlemen the character of whose business relations gives them a particular interest in the subject of his labors.

THE New York State Board of Railroad Commissioners, sent its report to the legislature, January 14. Accompanying it was a report by Dr. Edwin Hutchinson, on

color-blindness, with the following remark: "Further than to awaken the interest of railroads and of the public on the subject, the board does not at present deem it prudent to go." Apropos of this circumstance, an enthusiastic correspondent writes us: "Truth *versus* ignorance, prejudice, and pecuniary considerations, is beginning to bear fruit."

THE excellent series of articles on Railroad Medical Service, from the pen of Dr. Herrick, has been interrupted by the serious illness of that gentleman. We are happy to learn from him that he is so far recovered as to enable us to promise, with a reasonable degree of certainty, that the next number will be enriched by another contribution from him. His many readers will share the gratification which we feel in making this announcement.

The Vanderbilt Roads.

AT a meeting of the directors of the Lake Shore and Michigan Southern Railroad Co., held at the Grand Central depot, this city, on the 26th ult., a quarterly dividend of 2 per cent. was declared payable February 1, 1884. From the report which was presented, we learn that the gross earnings for the year 1883 (December being partly estimated), were $18,550,000, the operating expenses and taxes, $10,975,000, and the net earnings, $7,575,000, from which deduct rentals and dividends on guaranteed stock, $3,550,000, leaving a balance of $4,025,000—equal to 8.14 per share—from which deduct dividends of 8 per cent. for the year, amounting to $3,957,320, leaving a surplus of $67,688. Compared with the previous year, the gross earnings show an increase of $324,361, with a decrease in operating expenses and taxes of $82,807, making the increase in net earnings $407,168. The percentage of operating expenses to earnings was 59.17 against 60.67 in 1882. In the operating expenses are included the cost of 10,000 tons steel rails and all other expenditures incident to the maintenance and improvement of the property of the company, which has been fully maintained at its best standard.

The directors of the Michigan Central Railroad Co. also met on the same day and declared a dividend of 3 per cent., payable February 1, 1884. The gross earnings of this road (including those of the Canada Southern Railway) were $14,000,000, the operating expenses and taxes $9,700,000, and the net earnings $4,300,000; from which deduct interest and rentals, $2,475,000, leaving a balance of $1,825,000, which was divided as per traffic agreement, as follows: to the Michigan Central two-thirds, or $1,216,667, equal to 6.49 per share, and to the Canada Southern one-third, or $608,333, equal to $4.05 per share.

The directors of the Canada Southern Railway Company also met and declared a dividend of 2 per cent., payable February 2, 1884.

From the portion of earnings allotted to the Michigan Central Railroad Company, two dividends of 3 per cent. each, amounting to $1,124,292, are deducted, leaving a surplus of $92,375; and from the portion allotted to the Canada Southern Railway Company, two dividends of two per cent. each, amounting to $600,000, are deducted, leaving a surplus of $8,333. The ratio of expenses to earnings of the joint roads was 69.28.

Standard Time.

A RECENT number of *Harper's Weekly* gives a portrait of Charles F. Dowd, A. M., principal of Temple Grove Seminary, Saratoga Springs, New York, the originator of the system of national time lately adopted throughout the country. On the principle, "Honor to whom honor is due," we adopt a portion of the interesting biographical matter accompanying the aforesaid portrait:

Professor Dowd began his work systematically by presenting the rude outlines of his plan before a convention of trunk lines held in New York City in October, 1869. He took his model from astronomical time reduced to the standard of one meridian. This time, in relation to any place, is local time with a difference. He adopted the Washington meridian for the national standard, and then worked out the local differences for about eight thousand stations along the lines of about five hundred railroads. Then he laid out the country into sections of fifteen degrees of longitude each, with the Washington meridian as the prime standard, and the fifteenth, the thirtieth, and the forty-fifth meridians for the subordinate standards. He then carefully wrote out a full explanation of the system, and published all, with a map, in a pamphlet of over one hundred octavo pages. This pamphlet he sent out to all railway officials and others who might be interested in the subject. This was done in 1870. After publishing his work, Professor Dowd attended conventions of railway managers in Boston, in New York, in the West, and in the South, and in this way found that the differences exceeding an hour were regarded as impracticable. This led to the adoption of the subordinate standards as essentially independent of each other, only that the even-hour differences must be preserved. This done, each hour section became a well-defined section, with its own time standard; and, with standards so near and so simply related, the necessity for any more exact local time vanished. He further found that the Washington and the fifteenth meridians were located too far west to suit the wants of the Eastern and the Central sections. Therefore, after meeting a convention at Atlanta, Georgia, in the spring of 1872, he changed the system from Washington to Greenwich longitude, thus moving all the hour sections two degrees further east. This made the seventy-fifth meridian the standard for the Eastern section, the ninetieth for the Central, the one hundred and fifth for the Mountain, and the one hundred and twentieth for the Pacific—the fifth hour eastward being the standard time of England. This is the system now in operation.

CARRIAGES on the St. Gothard Railway, are chiefly on the improved American system. The first-class carriages have an outside platform with veranda, to enable passengers to enjoy the view. All the carriages are lighted by gas, and warmed with hot air. The express trains are fitted with continuous non-automatic vacuum brakes on the Hardy system. Electrical contact instruments are provided at intervals on the line to regulate the speed of the trains.

Old Colony Railroad.

THE income of the Old Colony Railroad Company for the years ending September 30, 1882 and 1883, was as follows:

	1882.	1883.
From passengers	$2,107,749 68	$2,173,998 18
From freight	1,774,643 87	1,833,203 23
From expresses	113,880 61	108,356 62
From rents	38,060 63	38,213 32
From mails	40,023 69	38,456 92
From extra baggage	3,723 90	4,962 05
From miscellaneous	48,176 01	51,989 17
	$4,126,258 39	$4,249,179 49
Expenditures:		
Passenger department	$423,801 96	$427,747 30
Merchandise department	540,827 52	534,751 17
Locomotive department	663,437 54	725,415 29
Maintenance of way	626,707 79	703,869 78
General expense	272,301 95	302,081 48
Miscellaneous expense	139,995 32	165,213 12
	$2,680,072 08	$2,859,078 14
Net earnings	$1,446,186 31	$1,390,101 35
From which deduct—		
City and town taxes	$33,820 37	$48,508 61
State tax	106,917 37	113,151 52
Interest on bonds, debt, etc	267,709 05	371,799 74
Rent paid for use of other roads	446,407 95	191,001 57
Deficit on Union Freight Railroad	201 88	.....
Fall River Railroad lease account	3,180 00	.....
	$858,236 62	$724,461 44
Net income	$587,949 69	$665,639 91

Out of the net income of 1883, a dividend of 3½ per cent was paid January 1, 1883, amounting to $263,683; and on the 1st of July, 1883, a similar dividend of 3½ per cent was paid, amounting to $344,323—leaving a balance for the year of $57,633.91, which was credited to improvement account, and which now amounts to $91,070.78, the balance to credit of surplus account remaining the same as at the close of the previous year, viz.: $762,515.67. This surplus contains the earnings of the company since June 1, 1883, and will provide in part for the dividend of January 1, 1884, and taxes due November 1, 1883.

At the date of the consolidation of the Boston, Clinton, Fitchburg and New Bedford Railroad Company with the Old Colony Railroad Company, March 6, 1883, the shares of the latter company were made shares of the consolidated company, and one share of new stock was issued for each share of the preferred stock, and eight-nineteenths of one share for each share of the common stock of the former company—making the cost of the railroad and property $2,314,820 in stock, and $3,557,915.44 in the amount of debt assumed; increasing by these amounts the construction and property accounts of the consolidated company. It is also proper to state here that the earnings, expenses, dividends, etc., from the date of the consolidation to the close of the fiscal year include those of the Boston, Clinton, Fitchburg and New Bedford Railroad.

Compared with the year 1882, the gross earnings of 1883 show an increase of $122,921.10, with an increase in operating expenses of $179,006.06, making a decrease in the net earnings of $56,084.96.

During the year, nine new locomotives have been added in place of four old ones condemned. Ten new passenger cars and one new parlor car have been purchased or built in the shops of the company, and 232 freight and coal cars have been purchased. The cost of new equipment for the year was $226,375.86. Large expenditures were also made upon repairs of equipment. The automatic has been substituted for the common Westinghouse brake, and safety heaters have been placed, instead of stoves, in most of the passenger cars. New and efficient spark arresters have also been placed on 60 of the locomotives. The equipment now consists of 66 passenger, 39 freight and 15 switching locomotives; 233 passenger, 43 baggage, 918 box, 8 hay, 4 milk, 6 derrick, 4 scraper, 4 tool, 31 caboose, 662 platform, 38 cattle, 71 stone, 1,205 coal and 100 gravel cars.

Large contracts for steel rails were made during the year. In all 10,000 tons were purchased (though only 8,000 tons were delivered in season to be used prior to the close of the year); of these 934 tons were used for the double track, and 294 tons upon the Fall River, Warren and Providence Railroad, which has been relaid with steel rails; 6,339 tons were laid in the tracks. The tracks between Boston and South Braintree have all been relaid with new steel rails weighing 67 pounds per yard. The cost of steel rails laid in place of iron, for the year was $158,472.90. Out of 468½ miles of railroad operated by the company, about 350 miles are now in steel. The number of new sleepers laid the past year is 177,212. Nineteen new iron bridges have been substituted for wooden bridges. The Fall River Railroad, which was leased in 1882, has also been regraded and put in good order.

Since 1855, an act of the Legislature has required a stop to be made by all trains crossing another railroad at grade. As now constituted, the Old Colony Railroad has eight such crossings. In 1882, an act was passed by the Legislature dispensing with the stop, provided a system of interlocking signals, approved by the Railroad Commissioners, was adopted, under the provisions of which approved signals have been placed at two crossings, and arrangements have been made for similar signals at four other crossings. The Union Electric signals have been placed upon the main line between Boston and South Braintree, to take the place of the Hall signals, which have been removed.

The alteration of the railroad in South Boston has been completed at a cost of $48,342.31, of which $19,882.16 was expended during the past year. New station houses have been erected at Framingham, Walpole, Medfield, Pope's Hill, Cataumet, Crescent Avenue and Egypt, and freight houses at Holbrook and South Framingham. The enlargement of the Taunton Central station has also been completed. The land purchased for a new station at New Bedford has been filled up and graded at a cost of $11,215, and a new and commodious freight yard has been made at South Framingham, upon which 2,250 feet of side track have been laid, at a cost of about $20,000. A new and additional freight house, 380 by 60 feet, has been built, and its cost, so far as paid, charged to construction. The second tracks in Fall River, Attleboro and Randolph have been completed at a cost of $14,762.50. Considerable work has been done during the past year on the construction of the second track between Mayflower Park and Middleborough, and from Randolph to Fall River. The second track has been extended about nine miles to Campello, and work has been begun at several points between Randolph and Taunton. The cost of these tracks the past year, $122,767.75, has been charged to construction.

The charges to construction, equipment and land accounts for the past year are as follows: Cost of Boston, Clinton,

Fitchburg and New Bedford Railroad, $5,872,735.44; land account of do., $14,007.70; completion of Whittenton branch, $13,456.21; double tracks, $122,767.75; freight station at South Boston, $16,275.44; land in Cohasset, Taunton and Boston, $11,867.07; land and buildings in Boston on Cove and Kneeland streets, $17,023.64—total, $6,068,133.25.

Since the union of the two companies, 4,000 shares of new stock have been sold, at a premium of $146,000. The premium was credited to improvement account. The balance remaining after payment for new construction was used to reduce the debt of the company.

The improvement account for the year ending September 30, 1883, stands as follows: balance from previous year, $85,719.27; premium of stock sold, $146,000; credited from earnings, $57,633.91—a total of $289,353.18; against which are charged: filling land at South Framingham and New Bedford, $31,215; extension of second track, $14,762.50; new equipment, $152,304.90—leaving a balance September 30, 1883, of $91,070.78.

The number of miles run by passenger trains during the year was 1,575,254; by freight trains, 917,602; by gravel and other trains, 539,337—total, 3,032,193, against 2,841,907 in 1882, an increase of 190,286. The number of passengers carried the past year was 7,144,651; do. carried one mile, 104,989,238. Tons of freight carried, 1,626,509; do. carried one mile, 57,915,789.

BALANCE SHEET, SEPTEMBER 30,

	1882.	1883.
Cost of road	$11,076,275 83	$16,186,387 17
Cost of equipment	1,191,319 08	2,165,759 08
Stock of Old Colony Steamboat Co.	725,500 00	725,500 00
Bonds and stock of Fall River, Warren and Providence R. R. Co.	348,655 43	348,655 43
Stock of Nantucket and Cape Cod Steamboat Co.	15,340 83	15,340 83
Stock of Union Freight R. R. Co.	79,014 42	79,014 42
Stock of Fall River R. R. Co	.....	5,967 00
Stock of Lowell and Framingham R. R. Co.	.....	28,558 10
Stock of Oak Bluffs Land and Wharf Co.	.....	100 00
Dorchester and Milton Branch	36,937 88	36,937 88
Union Freight R. R. Co. (property account)	22,463 75	22,463 75
Land account B., C., F. and N. B. R. R. Co.	16,511 52	.....
Real estate	286,987 53	286,987 53
Cash	161,730 20	215,128 68
Materials on hand	390,443 37	408,924 77
Due from agents	148,613 40	182,056 45
Bills receivable	400,938 31	255,859 67
Debit balances	82,479 64	166,513 00
Total	$14,893,211 20	$21,130,153 76
Capital stock	$7,533,800 00	$10,222,200 00
Stock of B., C., F. and N. B. R. R., unconverted	.....	26,420 00
Bonded debt	5,324,000 00	8,886,900 00
Bills payable	738,055 95	603,643 26
Accounts payable	271,919 52	272,791 92
Dividends unpaid	21,871 41	30,436 66
Coupons unpaid	12,215 00	22,349 50
Due connecting lines	111,399 26	187,482 71
Credit balances	121,715 12	24,343 26
Improvement account	85,719 27	91,070 78
Surplus	762,515 67	762,515 67
Total, as above	$14,983,211 20	$21,130,153 76

President—CHARLES F. CHOATE.

Directors—Charles F. Choate, Frederick L. Ames, Thomas J. Borden, John S. Brayton, Samuel C. Cobb, Uriel Crocker, Francis B. Hayes, Charles L. Lovering, William J. Rotch, John J. Russell, Nathaniel Thayer, Royal W. Turner.

Treasurer—JOHN M. WASHBURN.

New York Railroad Commission.

FROM GOVERNOR CLEVELAND'S MESSAGE, JANUARY 1, 1884.

THE law passed in 1882 creating a Board of Railroad Commissioners was made operative during the last year, and the board was organized on the first day of February, 1883. During the eight months between the organization of the board and the thirtieth day of September, 1883, seventy-five complaints were preferred, all of which were fully investigated. Many recommendations have been made to the railroad companies, calculated to protect the people in life and limb, most of which have been cheerfully adopted. Of the 6,500 miles of railroad in the State, all have been inspected by some member of the board, or by a competent engineer employed for that purpose. When defects have been discovered, the company operating the road has been at once called on to remedy the same. The companies have generally evinced a desire to coöperate in every effort to secure the safety of travel. Every accident occurring in any part of the State has been reported promptly to the board. The following is the record of those killed or injured in the operation of the railroads in this State for the eight months ending Sept. 30, 1883:

Passengers	34	118
Employés	110	396
Other persons	178	146
Total	322	660

Boston and Maine Railroad.

THE receipts of the Boston and Maine Railroad Company for the years ending September 30, 1882 and 1883, were as follows:

	1882.	1883.
From passengers	$1,593,117 02	$1,679,603 22
From freight	1,079,424 90	1,134,871 66
From mails	24,489 54	24,952 67
From expresses	71,294 28	76,516 14
From rents, etc	65,715 74	69,197 41
From interest	16,688 74	6,288 65
	$2,850,730 22	$2,991,429 75
Expenses.		
Repairs of road	$167,070 80	$184,903 69
Repairs of bridges	37,700 81	49,664 41
Repairs of fences, etc	11,026 40	15,728 18
Repairs of buildings	86,762 91	102,128 72
New buildings and machinery	10,803 55	26,464 02
Repairs of locomotives	47,631 79	75,055 07
New locomotives	36,926 01	31,688 31
Repairs of cars	96,224 35	91,834 45
New cars	69,514 48	85,356 94
Fuel and water for locomotives	244,755 07	266,593 16
Oil and waste	14,566 87	14,361 53
Renewal of ties	51,778 51	37,907 64
Renewal of rails	57,689 18	77,362 57
Insurance	6,600 00	7,215 98
Taxes	133,492 43	115,264 38
Salaries general officers and clerks	49,282 48	55,409 96
Legal expenses	13,731 47	9,151 15
Stationery and printing	18,077 40	16,260 71
Outside agencies and advertising	18,286 79	18,701 64
Contingencies and miscellaneous	12,861 16	9,694 87
Dover and Winnipiseogee Railroad rent	29,000 00	29,000 00
West Amesbury Railroad rent	5,700 00	5,700 00
Lowell and Andover Railroad rent	52,500 00	52,500 00
Kennebunk and Kennebunkport Railroad rent	.....	1,096 87
Locomotive service	124,517 92	128,385 82
Passenger train service	66,580 78	75,344 82
Passenger train supplies	8,577 35	11,016 67
Freight train service	37,991 29	38,155 80
Freight train supplies	1,378 49	2,036 32
Freight train mileage	12,324 80	16,850 64
Telegraph	8,463 27	8,967 10
Loss and damage	3,224 97	5,883 49
Personal injuries	41,826 36	12,562 55
Agents and station service	317,235 31	338,986 81
Station supplies	27,777 82	35,446 08
Balance of improvement account, above the sum reserved, charged to expenses	68,576 72	166,376 73
	$2,017,057 56	$2,159,057 08
Leaving as net earnings	$833,672 66	$832,372 67
From which deduct—		
Interest on bonds	$245,000 00	$245,000 00
Dividend 4 per cent. May	280,000 00	280,000 00
Dividend 4 per cent. November	280,000 00	280,000 00
	$805,000 00	$805,000 00
Surplus	$28,672 66	$27,372 67

It will be seen that the gross receipts for the year 1883 were $2,991,429.27, against $2,850,730.22 for the previous

year, an increase of $140,699.53; the operating expenses and taxes for the year 1883 were $1,964,383.48, against $1,861,280.84 in 1882, an increase of $103,102.64.

At the commencement of the year the company had 86 locomotives; during the year 6 locomotives were added, of which 3 took the place of an equal number worn out and broken up, making the number at the close of the year, 89, of which 50 are passenger, 22 freight and 17 switching locomotives.

The company have also 155 passenger, 8 parlor, 35 baggage and mail, 1,904 merchandise, and 231 gravel and other cars, and 12 snow ploughs. Of these, 13 first-class passenger, one combined passenger and baggage, and 175 freight cars have been added during the year. One passenger car has been remodeled into a paymaster's car, with all the conveniences necessary for safely transacting the business of paying the large number of employés scattered the entire length of the road.

There were laid down during the past year 3,331 tons of steel rails and 123,372 ties, of which 966 tons of rails and 26,309 ties were placed in the second track. The double track was extended during the year five miles, and at the date of the report, November 20, 1883, construction was going on between Old Orchard and Scarboro, the rails having been laid between Pine Point and Old Orchard. The grading between Pine Point and Scarboro was also nearly completed, and will be ready for the rails early in the spring.

Referring to the lease, by the Boston and Maine Railroad Company, of the Eastern Railroad, the report says:

"A lease of the Eastern Railroad to this company upon terms agreed upon by your Directors and those of the Eastern Railroad Company was ratified by both corporations at meetings held on March 28, 1883, to take effect when duly authorized by the laws of New Hampshire. Such authority was obtained at the session of the Legislature of that State held last summer.

"Meantime on May 1, one of the trustees appointed under the mortgage of the Eastern Railroad Company presented to the Supreme Judicial Court of Massachusetts a bill in equity praying the Court to enjoin that company from executing the lease, substantially on the ground that it does not provide for the sinking fund established under that mortgage for the benefit of the holders of the certificates of indebtedness secured by it.

"The remaining trustees have refused to join in the bill as plaintiffs.

"The existence of this suit has hitherto delayed the execution of the lease, and the suit is still pending.

"The Boston and Maine Railroad is not a party to it, and at a preliminary hearing the Court has decided that it need not be summoned in as such, but has directed notice of the pendency of the suit to issue to all the holders of the certificates of indebtedness of the Eastern Railroad. The term of this notice will expire in January next. There appears to be no reason why the argument of all questions mooted in the case should not be had before the full court in the coming March."

The double track on the Lowell and Andover Railroad (leased by this company) was completed to Wamesit station, 5½ miles, on the 18th of October, when regular trains commenced running over it. The remaining 3 miles were to have been ready for use by the 1st of January, 1884. The cost of this work is to be repaid by the Lowell and Andover Railroad Co. upon the termination of the lease.

A road was built during the year from Kennebunk to Kennebunkport, 4½ miles, under a lease to this company for 99 years from May 15, 1883, at 4½ per cent. on a cost of $65,000. This road was opened to the public June 18, 1883.

The number of passengers carried during the year was 6,488,756, against 5,984,000 in 1882, an increase of 504,756; the number carried one mile was 85,216,481, against 81,641,541 in 1882, an increase of 3,574,940. The number of tons of merchandise carried was 946,906, against 904,966 in 1882, an increase of 41,940; the number carried one mile was 48,736,777, against 44,882,394 in 1882, an increase of 3,854,383. The number of miles run was 2,028,735, against 1,945,599 in 1882, an increase of 83,136.

TREASURER'S TRIAL BALANCE, SEPTEMBER 30,

	1882.	1883.
Construction	$9,512,780 26	$9,512,780 26
Equipment	1,242,330 00	1,308,180 00
Materials on hand	216,480 44	281,894 96
Cash	222,613 69	269,160 97
Notes receivable	86,200 43	143,608 89
Land and improvements Dover and Winnipiseogee Railroad	26,603 23	28,606 99
Dover and Winnipiseogee Railroad stock	263,144 48	263,144 48
Steamer Mt. Washington and wharves	69,260 24	69,260 24
Danvers Railroad bonds	125,000 00	125,000 00
Danvers Railroad account	27,430 00	27,430 00
Lowell and Andover Railroad betterments	58,774 42	122,510 14
Newburyport Railroad stock and bonds	302,001 95	302,001 95
Portland and Rochester Railroad	118,919 75	118,919 75
Due from station agents	80,764 98	80,812 57
Miller's River improvement	17,976 34	18,963 24
Land near State Prison, Charlestown	23,487 71	32,696 51
New double track	.....	69,070 88
New iron bridge "Cocheco River," Dover, N. H	.....	9,695 55
Total	$12,393,667 92	$12,783,737 38
Capital stock	$6,921,274 52	$6,921,274 52
Seven per cent. bonds due 1893	1,500,000 00	1,500,000 00
Seven per cent. bonds due 1894	2,000,000 00	2,000,000 00
Notes payable	100,000 00	500,000 00
Lowell and Andover Railroad improvement account	4,434 43	4,291 38
Uncalled for bond interest	7,087 50	8,925 00
Uncalled for dividends	17,349 00	18,456 50
Accounts payable and pay rolls for September	175,534 14	190,317 30
Ledger balances	30,486 20	4,270 54
Profit and loss	1,037,502 13	1,636,202 14
Total, as above	$12,393,667 92	$12,783,737 38

President—GEORGE C. LORD.

Directors—George C. Lord, Nathaniel G. White, Amos Paul, Nathaniel J. Bradlee, William S. Stevens, James R. Nichols, John Felt Osgood, Samuel E. Spring, Nathaniel W. Farwell.

Treasurer—AMOS BLANCHARD.

General Superintendent—JAMES T. FURBER.

Auditor—H. W. B. WIGHTMAN.

Clerk—CHAUNCEY P. JUDD.

THE IRON TRADE IN 1883.—Secretary Swank, of the American Iron and Steel Association, says the year's production of pig-iron was equal to that of 1882, 4,623,323 tons; the consumption about 4,948,323 tons. The production of steel rails in 1883 fell off below that of 1882. There were also made probably less tons of iron rails than in 1882. The total rail tonnage of 1882 was 1,501,881 gross tons, of which 203,459 tons were iron rails and 1,304,392 tons steel rails. The total rail production for 1883 was probably 1,300,000 gross tons, of which 1,200,000 tons were steel rails. Our imports of steel rails for 1883 were about 100,000 gross tons as against 200,000 tons in 1882. In round numbers, our consumption of rails in 1883 was three hundred thousand tons less than in 1882.

THE United States Rolling Stock Company is actively pushing operations for its new extensive works on the Calumet River, some twelve miles south of the Chicago city limits. Shops are being erected, docks are being built, and grounds are being prepared for the new industrial city which will next year spring up—another marvel of manufacturing enterprise.

A LEADING feature of the *American Machinist* for January 19, 1884, is the article on railroad snow-plowing, by Angus Sinclair. It is accompanied by a finely-engraved sketch of the Cushing snow-plow.

Lubricating and Lubricants.

BY E. F. DIETERICHS, CLEVELAND, O.

II.

VARIOUS KINDS OF LUBRICANTS.

ALL fatty substances are used for lubricating purposes, but their characteristics are so different and the requirements for lubricating so manifold, that the selection of lubricants and the way of applying them are matters of considerable importance. All fatty substances are either liquid or solid, and either of animal or of vegetable origin. They are used in their natural state or compounded and mixed in various proportions with each other or with inert matter, such as lime, sulphur, lead, asbestos, graphite, soapstone, etc. Liquid fatty matter is principally used for lubricating lighter and fast running machinery; solid fatty matter on machinery with slower motion and of heavier weight.

LIQUID LUBRICANTS.

FATTY OILS.

All the fatty oils of animal or vegetable origin, and the so-called mineral oils, are liquid lubricants. These stand foremost among the oils of animal origin, sperm-oil, neats-foot oil and lard oil, followed by tallow oil and fish oils, and among the oils of vegetable origin, olive oil, rape or colza oil and castor oil; cottonseed oil, linseed oil and rosin oil belong to the class of drying oils which are unfit for lubricating purposes, and are seldom used by the judicious mechanic. All these oils, from the nature of their composition, are liable to decomposition, not only from the action of the heat emanating from friction on bearings or from the steam in cylinders, but also from simple exposure to atmospheric influences, especially when spread in thin layers over large and heated metallic surfaces, whereby their acids are set free and their bases readily combine and are converted into solid, gummy matter with the small particles of abraded metal, that in spite of the best lubricants will wear off when metal comes in contact with metal in motion. The temperature at which these oils vaporize is too high, and before they can radiate into space with frictional heat, they accumulate and retain enough of it to become decomposed.

MINERAL OILS.

The oils known as mineral oils in their natural state, do not present the same defects; they are not changed by atmospheric influence, do not form acids, but are lacking body, and heat affects them, and unless of lower gravity they are readily decomposed by frictional heat, and their light and dangerous vapors depart too fast to be able to radiate more than a very limited proportion of it into space. Those of heavier gravity are seldom free from grit (finely suspended silicious and dark-colored carbonaceous matter), and their accumulated deposits are equally if not more injurious to machinery and a drag on the motion, than the gummy deposits of the fatty oils above mentioned.

The so-called "reduced oils," and those resulting from distillation, derive their unctuous feeling and heavy gravity from the accumulated amount of paraffine wax and scorched carbonaceous matter in suspension. They have been deprived of their lighter hydro-carbons, and the thereby produced amount of wax and matter in suspension, and the temperature at which they vaporize, give them, apparently, greater heat-absorbing and more proportionate heat-radiating quality than the natural oils before mentioned, but their greater deposits of impurities and wax under frictional heat, and their inability to remain limpid at slight lowering of the temperature, class them with the poorer lubricants.

The oils known as "paraffine oils," derived from the residuum stock of distilleries, and refined and freed from all wax by cold and pressure, are by far the purest and best adapted for lubricating very light machinery, but do not possess sufficient body to prevent surfaces from abrading each other in motion under heavy weight; and those with apparent body from wax left from imperfect separation, are superior only in cleanliness to the oils reduced by steaming and distillation before mentioned, but like them form waxy deposits, which cause dragging on the motion, and they solidify too easily in cold weather.

Compounding paraffine oils with fatty matter makes a tolerably good lubricant; its value however, is proportionate only to the amount and quality of the admixed fatty matter, and gum is continually deposited in proportion to the amount of fatty matter contained in it, which is generally of poorest quality for the sake of bigger profits.

From all said in the above it will be seen that the best fatty oils deposit gum and the mineral oils paraffine-wax, and it shows that the fatty acids of the former and the oily hydro-carbons of the latter, alone are the real lubricants. By binding the fatty acids to a base to prevent decomposition and combining them with oily hydro-carbons of best quality, we form a lubricant which combines the best characteristics of both the fatty and the mineral oils, and as near as possible, all the following characteristics which a good lubricant must possess:

1. Sufficient body or viscosity to absorb the frictional heat as rapidly as it is evolved by friction.
2. Capability to vaporize at a temperature proportionate to its heat-absorbing powers.
3. Least inclination to decompose under atmospheric influence, temperature or steam.
4. Contain no free acids, gum or grit.
5. Retain a nearly uniform consistency at all temperatures.

COMPOUNDED OILS.

The lubricants called "compounded oils" comprise an endless variety of mixtures. The residuum oils and still-bottoms from distilleries are worked into cheap grades of oil by addition of lighter oils, often so light, and sometimes thinned down with benzine only, that their rapid evaporation under frictional heat becomes dangerous. They are made to show a plausible consistency and deceiving gravity, and are sold at all prices and under all kinds of names, such as Mecca and West Virginia oil, but are poor imitations of these once much preferred natural oils. The dangerous character of some of these mixtures is well known; they have been the cause of many fires and accidents. It requires only careless handling of lights near such oils while in store, in use or under shipment, to ignite the vapors arising therefrom to the danger of life and property, and it is astonishing, that as yet no steps have been taken by insurance companies and legislators to prohibit the sale and shipment of such lubricants, more dangerous than the vilest of burning oils prohibited.

Other oils of this kind are said to be improved by admixtures of rosin-paste or rosin-oil, and they are sometimes slightly improved by admixtures of very small quantities of fatty matter of the lowest order. They contain all the charred carbonaceous matter, the tar and grit from the stills, which no amount of steaming and pretended filtering is able to remove. That such oils are not efficient or economical, even at the low prices at which they are sometimes sold, will be seen when their characteristics are taken into consideration. Those "compounded oils," made from heavier mineral-oil, refined and bleached, and mixed in various proportions with animal or vegetable oil and fat, and those with extra additions of caoutchouc, wax, sulphur, graphite, etc., command their price and standing in the market, proportionate with the quality and quantity of the admixed fatty matter, and are sold under a variety of names often entirely inappropriate and deceiving the inexperienced as to their origin and quality.

Oil mixtures consisting of watery emulsions with the aid of alcaline or mucilaginous additions, hardly deserve mention. Their value also depends alone on the proportion of real fatty matter they may contain, but the temptation of apparent cheapness misleads, until slow but unavoidable injury convinces to the contrary.

SOLID LUBRICANTS.

Solid lubricants consist principally of tallow or lard or combination of either or both with palm oil, rape or colza oil or mineral oil, brought to proper consistency with weak lye, lime water or lime paste. Fatty matter of all kinds and quality, residuum and tar from refineries, in short, all that possibly can be worked into this kind of lubricators and can be given a greasy appearance and consistency, is worked into what is known in the market under the name of "grease." The additions of lime, graphite, lead, asbestos, sulphur, soapstone, etc., to greases used on machinery moving under heavy pressure and heat, act only as a medium. They fill and accumulate in the interstices of the bearings, and like the metallic, compositions serve as a sort of cushion for the lubricant.

The character of the machinery for which this kind of lubricants is used, is of the grosser, heavier kind; hence less attention is given by mechanics to ascertain the indirect advantage that would result from the use of grease of best quality, and cost is generally the only point considered. Here also is the fatty acid alone, the lubricating, that is the heat absorbing and vaporizing principle, held to the moving surfaces by medium of the stearine, palmitine, paraffine or rosin, which ultimately are left as concentrated and charred gummy deposits.

It is a great error to compound liquid lubricants with inert matter, such as plumbago, asbestos, etc., under the delusion that such additions increase the lubricating power of the lubricant. On the contrary, whatever the value of the lubricant otherwise, it is actually made worthless by such additions. The circumstance that hot bearings are sometimes effectually cooled by application of plumbago or like inert matter, has misled some of the best mechanics into the belief of their value as lubricants. When a bearing becomes heated, from whatever cause, either neglect of lubricating, inefficiency of the lubricant, or mechanical defects, the metal expands and the moving parts are thereby brought into so close contact with each other that the lubricant, however good, is incapable of penetrating between them; it decomposes and vaporizes faster than it is able to absorb the accumulating heat. By suddenly applying a heavy body of fatty matter in the shape of a piece of tallow or a candle, the heat is rapidly absorbed and transferred to the regular lubricant, and the metal, becoming relieved of the accumulated heat, contracts, and the regular lubricant succeeds in penetrating between the surfaces, and if attentively applied will prevent further overheating. The same is the case when we apply plumbago or other fine inert matter to heated bearings. This is drawn in between the moving surfaces by their velocity, and opens the way for the lubricant to penetrate between its particles, and serving as a sort of cushion, absorbs a large amount of the accumulated heat, which it transfers to the vaporizing lubricant. If, however, we think to conclude therefrom that a lubricant mixed with such inert matter must be equally efficient with daily applications for some time, we misunderstand the cause of the action, and simply accumulate inert matter on bearings or in cylinders; and vaporizing lubricant will finally be unable to vaporize all the increased heat which the accumulating incumbrance and drag on the machinery is creating.

What was said here holds equally good with solid lubricants, often compounded with large additions of inert matter, as plumbago, asbestos and such like. If lubricating was simply a mechanical action, these additions would be in place, and one application of such compound would serve as a cushion for any length of time, but as lubricating is a chemical action based on the vaporizing of the interposing lubricating substance, the fatty acids of the fatty matter in such grease compounds alone are able to vaporize with the heat, and at every renewed application leave the inert matter behind, together with the gummy deposits, to cause dragging on the motion. These deposits accumulate more and more, and finally hardening under the heat they absorb, abrade and injure the machinery unless removed by continued cleanings.

(*To be continued.*)

THE attention of the reader is called to the announcement of Le Page's Liquid Glues, made by the Russia Cement Company, Gloucester, Massachusetts. These and the Russia Belting Cement, manufactured by the same firm, are of the utmost value in numberless descriptions of work, including all those in which any kind of glue or sizing is required. Such variety of utility characterizes very few articles.

A PARTY will leave this city on the twenty-sixth of January, 1884, on an excursion to Cuba and Nassau, New Providence. This is the third annual mid-winter excursion to those places, organized by Messrs. Leve & Alden, No. 207 Broadway, New York. Nearly forty days will be spent by the excursionists in warm latitudes, at a time when the climate here is a varying torture.

THE attention of readers is directed to a pamphlet published by the H. W. Johns Manufacturing Company, No. 87 Maiden Lane, New York, containing a variety of information concerning the use and value of asbestos in building, economy in the use of machinery, etc.

HE that gets out of debt grows rich.

Communications.

As readers find under the above head, a variety of conflicting opinions expressed by numerous correspondents, there is no need to say that the editor is not responsible for the views expressed in this department. He respectfully invites communications from all who desire that what they think or know on railroad subjects shall be placed before a numerous, interested and influential class of readers, in a style, as to printing and appearance, which invites to thorough perusal and consideration.

Editor American Railroad Journal:—

THE heating and ventilation of passenger cars successfully is no easy problem, although to the layman, the difficulties do not appear. The writer's experience has been that the more complicated and radically "scientific" plans are seldom successful, probably because the exact manner and time in which this device is to be opened, or that one shut, is never clearly understood by any one save the inventor; and as the brakeman has the handling and control of the management of this feature of railroading, he cannot be expected to exhibit many scientific attainments or understandings for the munificent compensation of $50 per month, and so many ventilating devices, for want of proper handling, are failures. It is of course a fault of the device, for no matter how perfect its action may be, if properly cared for, the fact that the brakeman is to handle it and not the inventor, should be kept in view by the latter. Unfortunately, this important factor is too often overlooked. It seems as if there were less complaints twenty years ago about "the vitiated air of passenger cars," when a box stove, holding a wheelbarrow load of wood was used on heavily timbered roads, or a "cannon stove" on coal roads, than there is at the present day, with the many improved arrangements. It may be that the passengers are educated up to a much higher appreciation of their due as passengers, than in the days gone by. It is clear that the ventilation and heating of passenger cars go hand in hand, being mutually dependent on each other, and that hot air ascends, and vice versa. Simple as these facts are, they are frequently overlooked, when the subject of this article, of which these facts are the very foundation, are considered by the designer. Several very expensive day cars were recently built with improvements in the ventilation, but it was found that these cars in summer were ten degrees hotter than cars built nearly twenty years before, and running in the same train. The present system of heating cars by running steam or water pipes, or hot air conveyors along the floor at the sides of the cars is undoubtedly superior to stoves, but when combined with ventilators kept open in the deck of the car to any extent, the result is that the car is kept cleared out of its heat, or if the ventilators are closed the car is soon overheated with impure air, and this is the result of nine out of ten ventilating systems.

If, however, openings are provided in the ends of the car, or doors near the floor, the deck ventilators kept closed, and fresh air allowed to find its way in at the forward end of the car near the stove or heater, or through a jacket surrounding them, the car can be kept comfortably warm and the impure air forced out of the car without robbing it of its heat at the same time and by the same means. The heat given off by the heating pipes rises to the top of the car, where, if the ventilators are open, it finds an exit. If, however, the ventilators are closed, the car fills with warm air, and the impure air, with its heavy load of carbonic acid gas, is forced to the floor and escapes at the rear end, through the openings referred to. A prominent master car-builder informed the writer that he had used a plan embodying these principles with splendid effect. His plan consisted of encasing a pipe between the windows, extending from the floor through the roof. At the floor an opening was provided for the pipe, and covered with netting. At the top of the pipe a hood with a vane was provided, by which means the mouth of the hood was kept always opened to the back of the train. When the train was running, the rapid passage of the hood through the air, acting on the principle of induced currents, kept an upward movement through the pipe, thus drawing off the air from the bottom of the car instead of the top, by which means the car was kept not only warm but well ventilated. Four of these ventilators on each side of the car were used, although the gentleman referred to thought more would give better results. A damper arrangement in the pipe made the ventilation or quantity of air drawn off adjustable.

SINBAD.

Editor American Railroad Journal:—

As a railroad man, I desire to protest against the great amount of shoddy and pinchbeck literature (?) practical railroad men are confronted with in many of the so-called "railroad papers." Practical railroad men have little time or inclination to write their experience or views, and in consequence the great mass of dry rot forced upon railroad men is written by clerks, boys, canvassers, advertising agents and what not, whose railroad experience consists of perhaps a half dozen rides a year on the street cars. If a master car-builder turns out a new passenger car, the next issue of the *Universal Water Closet* has the following delectable and instructive three columns on the subject: "Mr. End-sill, the veteran master car-builder, of the L. M. N. O. P. R. R. has just finished the most sumptuous, elegant, and convenient passenger car ever seen in this section. It is about three times the length of an ordinary freight car, and is painted in a delicate tint of pea green, and beautifully decorated. On entering the car we find a perfect palace of beauty and convenience, superbly designed and magnificently finished in costly woods of the Orient, leading the imagination to believe it is the veritable historic barge of Cleopatra," etc., etc. The practical railroad man is of course greatly enlightened by this valuable information, and files away carefully the paper containing it for future reference—in the waste basket.

If a new locomotive is the subject, the reader is salivated in about this style: "That thorough and experienced mechanic, Sandbox T. Reachrod, master mechanic of the X. Y. Z. R. R. has just turned out a superb new passenger engine, bearing the No. 12,299. She is built entirely from the original designs of Mr. Reachrod, and is the fastest engine ever built in this country. She is provided with four immense driving wheels, which are held relatively to each other by a massive bar attached to a gudgeon cast in each wheel. As we pass toward the forward end of this magnificent structure, reminding one of some fabled courser eagerly champing its bit in its desire to exhibit its paces, we find two brass cylinders provided with steam boxes. The piston is arranged to slide back and forth, thereby transmitting its ponderous force to the driving

wheels through the medium of an immense pitman rod. The boiler projects beyond the smoke stack quite a piece, and contains a smoke burning device, the invention of Mr. Reachrod, by which the large quantities of black smoke emitted by ordinary engines will be entirely prevented. This invention alone stamps Mr. Reachrod as the best mechanic of the age. The boiler, we are informed, is pierced for a large number of brass pipes called flues, by means of which the heating surface is greatly augmented. Pumps for forcing water into the boiler are entirely done away with, being replaced by an instrument called an 'injector,' and to Mr. Reachrod is due the credit of first discovering the merits of this extraordinary device. The truck wheels are made entirely of paper and demonstrate the wonderful uses to which this material can be applied. These wheels are strongly riveted to 'truck axles' which are supported on 'brass boxes.' The boiler is covered with planished iron, having a brilliant lustre, which is held in place by brass bands which also serve to strengthen the boiler against the enormous steam pressure, etc., etc. The veteran driver, Jack Pullheroverandplugher, has charge of the 12,299, and informs us that on the trial trip she performed admirably, the trip being interrupted but once by the slipping of the ash pan, which Jack quickly adjusted.

"We are further informed that this elegant piece of mechanism is intended to draw the Corn-cob and Huckleberry express which the managers of the X. Y. Z. R. R., ever watchful of the interest of their patrons, have put on for the summer months for the express purpose of accommodating their through travel, which has lately assumed immense proportions."

Or if the subject is "Internal passenger car ornamentation," the instructor of car-builders remarks: "All ornamentation, strictly speaking, should be accessory and not introduced or used in such prolific profusion as to obliterate, so to speak, the fountain head, as it were, of the immediate source from which it springs, and from this it would appear that the mechanical structure should necessarily form the paramount object in view, and treating the decorative and purely æsthetic features as secondary and subordinate." The extreme lucidity of this, to say nothing of the purely technical treatment, will insure every master car-builder in the land fully appreciating and understanding it. Or the thirsting railroad man is informed, anent accidents, that "some of the most serious and horrifying of railroad casualties are too often due in their causes to initial beginnings which cannot be foreseen nor provided against by finite intelligence, yet in the great majority of cases the cause is due to the absence of the most obvious and necessary precautions, and the most effectual preventive of such catastrophes is to be found in the most rigid and arbitrary enforcement of a correct and thoroughly devised code of special regulations, looking to the special end of preventing them."

This, it will be seen, covers the whole ground, and is so simple and sure, that it is to be wondered at that accidents will occur, when a thorough understanding of the above simple treatment of casualties would prevent them entirely.

I might go on indefinitely in imitation of the too prevalent style of literature prepared for the practical, frequently unlettered but self-educated and suffering railroad man and mechanic, who will read with avidity a practical article which he so seldom finds, but who "fires out" with remarks anything but scriptural, the class of papers dealing—from necessity—in a mass of words, thrown together by a writer who knows absolutely nothing, practically, about what he is writing. It is no wonder, then, that railroad men complain that they find more of interest to them and their business in a last year's almanac!

A SUFFERER.

Our Canadian Letter.

From Our Special Correspondent.

OTTAWA, January 8, 1884.

THE severe cold weather period having set in, railway construction in Canada is at a standstill; once, however, spring arrives, unprecedented activity in this direction is confidently anticipated, as the "first sod" will be turned on quite a large number of projected roads, branches, etc. From present appearances the "silver spade" will be freely brought into service.

The Canadian Pacific is fast pushing its way nor'westward; in six weeks' time the line will have been completed from Montreal to Algoma. There is only a link of a few miles between the last-mentioned station and Sudbury Junction to be finished. Freights are now running to the Junction. Passenger traffic is in progress as far as North Bay on the main line, and not many miles from Sudbury. Next May, when the road is in running operation to Algoma, the distance between Montreal and Winnipeg will be made in three days. A fleet of steamers will be utilized between Algoma and Thunder Bay, from which place to the bird's eye city of the northwest, the C. P. R. is now running, until such time as the all rail route around Lake Superior will have been finished. A gang of about five hundred Italian navvies, employed in the work near Sudbury Junction, were discharged within the past week. They returned to Buffalo.

As regards the C. P. R. line, west of Winnipeg, satisfactory progress was made during 1883. The track will, at the end of this week, reach the summit of the Rocky Mountains, thus fully carrying out the past year's programme of work, nearly six weeks ahead of the time allowed for it. At present there are about seven hundred and fifty men employed in the mountains; it is the intention to reduce the number immediately, and to confine the remainder of the winter's work to making ties and timber, forwarding supplies, and completing the final adjustment of the line.

Referring to the C. P. R., a leading commercial exchange, in reviewing the work of the past year, said, that "owing to the desperate efforts of persons on the stock exchange to depreciate securities, the Government have consented to guarantee the stock for ten years, to the extent of three per cent., taking ample security that the Dominion will lose nothing by its guarantee; the result so far on the stock has hardly been what was expected. It has, however, prevented it from being utterly wrecked, as appeared likely to be the case; and there is very little doubt that the advantage of the arrangement has been very great. The prospect is that the entire railway will be complete within two years."

The plan of the new bridge of the Ottawa, Waddington and New York Railroad, over the St. Lawrence Rive

from what is known as Ogden's Island, to Goose Neck Island, is now before the Privy Council here for approval. There are good grounds for the belief that the plan will be accepted. At the new site for the structure, the current is neither so speedy nor tortuous as the site first selected by the engineers. Navigation will be accommodated with a high level (sixty-one feet) bridge, and a swing bridge likewise. A director to-day informed the JOURNAL representative that in connection with the twenty mile branch south of the St. Lawrence to connect at Canton with the American system of railways, the necessary deposit has been made at Albany.

The survey of the Ontario and Pacific Railroad, a newly projected line, intended to connect Sault Ste. Marie on Lake Superior with Cornwall, on the St. Lawrence near Montreal, is in progress, the staff being at present engaged near Perth, above Ottawa. The president is Dr. Bergin, of Cornwall, who is apparently acting for a number of heavy capitalists, as yet unknown to the public.

At the coming session of Parliament, which begins on the seventeenth, the Grand Trunk will ask for power to consolidate and rearrange certain classes of its stocks and securities, for the purpose of providing additional capital to lay a second line of rails along portions of the road. They will also ask authority to create additional securities.

The following is the gist of the regulations for the transportation of goods in transit through the United States issued by the Dominion Government; goods of domestic origin may be transported from one port to another of Canada, over territory of the United States, with the consent of the United States authorities by routes designated and bounded for that purpose. Cars must be specially appropriated for such transportation, placed under customs lock, and sealed by an officer of the customs at the port of departure in Canada, and must remain sealed until they have passed through the United States and again arrived in Canada, when they may be released from further customs surveillance. Merchandise in bulk, which is incapable of being put in locked cars, may be transported on platform cars, carded and sealed. Imported goods in bond may be transported in like manner, under the usual transportation entry and bond. If merchandise, on reaching its destination in Canada, does not correspond with the manifest, if seals be lost or broken, or if packages, cars or seals appear to have been tampered with, the goods will be detained, if circumstances justify it, for seizure and forfeiture.

Haligonians annually become agitated with the winter port question. This time they appear bound to use their every effort in forcing the C. P. R. to adopt Halifax, instead of Portland, as its winter port. Numerous public meetings have been held in that city, and as an outcome, a series of resolutions have been adopted for submission to the Government. The effect of these resolutions is about as follows: That as the C. P. R. has it in contemplation to locate their Atlantic winter terminus at a United States port, and, whereas the C. P. R., although in one sense a private corporation such as would be, under ordinary circumstances, empowered to locate their road so as to secure the largest practicable profit to the company's shareholders, on the other hand, has undertaken a great national work with a view of building up and consolidating the various sections of the dominion: Therefore, within the opinion of the Council of Halifax, the projected location of the Atlantic winter terminus of the C. P. R. at a foreign port would be a direct violation of the principles enunciated and acted upon by the Government and parliament with respect to the road around Lake Superior, and an outrage on the people of the lower provinces; and that it is the imperative duty of the Government of Canada to take such steps as may be found necessary to secure the location of the Eastern winter terminus of the great inter-oceanic railway at a harbor within our own borders.

The advent of the new year brought with it, as generally happens, a disastrous railway catastrophe. On the second instant a terrible collision occurred outside of Toronto, at the Humber, on the Great Western division of the Grand Trunk, by which twenty-seven men lost their lives, and many more were fatally wounded. A suburban train was run into by a freight. All on board were employés of the Toronto Bolt Works; the accident caused great excitement. The conductor of the freight, who is charged with running without orders, is in custody. The victims were given an impressive public funeral. The relief fund had run up to the amount of $12,000, the Governor General subscribing $250. An investigation is in progress.

The C. A. R. has opened a passenger depot at the Chaudiere, next to the Union station, in this city. This is a great convenience to the traveling public.

Philadelphia and Reading Railroad.

THE comparative statement of the business of the Philadelphia and Reading Railroad and Coal and Iron Companies for November and fiscal year ending Nov. 30, 1883, shows: Total gross receipts of the railroad company for November, $3,654,916.21; total gross expenses, excluding rentals and interest, $1,581,435.45; profit for the month, $2,073,480.76; profit for the year to date, $14,547,479.25; profit for the same month of 1882, $1,104,564.49; for the year, $9,859,064.98; gross receipts of the coal and iron company for the month, $1,756,584.50; gross expenses, excluding interest, $1,363,379.64; profit for the month, $393,204.86; profit for the year to date, $921,771.79; profit for the same month of 1882, $303,121.24; for the year, $1,200,173.91. From this deduct for the railroad company: Debit balance renewal fund, $27,499.03; State tax on capital stock, $55,909.36; all rentals and full interest on all outstanding obligations, including floating debt, $12,101,666.89. For the coal and iron company: Full interest on all outstanding obligations other than those held by the railroad company, $1,126,942.70; total, $13,312,017.98; surplus of both companies, $2,157,233.06; 7 per cent. on preferred stock, $108,626; 6 per cent. on common stock, $1,990,972.52; total, $2,099,598.52; balance applicable to interest on deferred income bonds, $57,634.54. The above statement includes the workings of the Central Railroad of New Jersey and branches for November, and for six months, from June 1 to Nov. 30, viz: Profit for the month, $124,407.51; for six months, $633,482.57.

A REPORT that the pig iron dealers of the United States were about to form a pool to control the output and the price of that product in this country, has been exploded by the dilligent researches of the *Iron Trade Review*.

A RETROSPECT:

BEING

A Complete History of Railroad Progress in America.

Compiled from this Journal, beginning Fifty-two years ago.

CHAPTER I.

OUR FIRST NUMBER.

ITS CRUDENESS—BUT FAVORABLY RECEIVED—ITS APPEARANCE AND MAKE-UP—GENERAL VIEW OF ITS CONTENTS—THE STEAMIAD, A PROJECTED EPIC—THE JOURNAL STARTED IN STIRRING, EVENTFUL TIMES AT HOME AND ABROAD—LIST OF AMERICAN RAILROADS IN PROCESS OF CONSTRUCTION AT THE BEGINNING OF 1832—OF THOSE PROJECTED IN NEW YORK STATE.

AMONG the most cherished possessions of the publishers of the AMERICAN RAILROAD JOURNAL, is a complete file of its issues, from Vol. I, No. 1, bearing the date, "New York, January 2, 1832," to the present time. The purpose of a series of articles, beginning in this number, and to be continued in succeeding issues, is to review the contents of the early volumes of "the oldest railroad journal in the world." The writer's hope will be gratified should the reader find as much pleasure in following the results of his researches, as he has found in making them.

A quotation from No. 2, January 7, 1832, explains the remarkable crudeness which characterizes its predecessor, and aptly prepares the way for a description of No. 1. Speaking of this, the publisher, whose professional modesty appears in his use of the third person when meaning himself, says: "The haste with which it (No. 1) was got up (one week only having elapsed from the time he decided to publish it, before the first number was printed) prevented him from giving it that finish which a specimen number usually receives; that nicety of dress, so requisite to the favorable impression which a traveler should desire to make upon intelligent strangers, or that variety of matter and propriety of arrangement which generally secure the confidence and patronage of the reading community." The want of finish admitted by the "publisher and part proprietor," appears in the fact that part of the first impression was issued with the mistake of a year in the date—"1831" instead of "1832." It appears, notwithstanding its defects, that the new venture was well received, as note the following: "In presenting the second number of the AMERICAN RAILROAD JOURNAL to the public, the publisher cannot refrain from expressing his thanks to the editorial corps for the uniform politeness with which the first number of his journal has been received."

Said first number consists of sixteen pages of about the same size as those of the JOURNAL as it appears now, arranged in three columns to each page. Its title is simply "RAILROAD JOURNAL," and it is headed with an illustration thus described on page 3 of the issue: "The cut at the head of the JOURNAL represents the locomotive engine, the Novelty, of Messrs. Braithwait & Ericsson (which competed for the prize of £500, offered by the directors of the Liverpool and Manchester Railway Co., and which would probably have taken it, but for some trifling difficulty in the machinery), and with a carriage for passengers of sufficient size to accommodate eighteen inside." The reader will note the distinction between English and American usage which obtained even at that early time, as regards the use of the words railway and railroad respectively; and that the English term carriage, meaning car, was then employed in that country. A prospectus signed "D. K. Minor, No. 35 Wall street, New York," is the first feature of the contents. It gives the full name of the journal, and as its principal object, "to diffuse a more general knowledge of this important mode (the railroad) of internal communication, which, at this time, appears to engage the attention of almost every section of our country." Moreover, Mr. Minor's arrangements with the New York *American* enabled him to promise that, the subject of internal improvement being first provided for, the remaining part of the paper would consist of "the literary, miscellaneous and news matter of the New York *American*, as prepared for that paper, omitting all political subjects, except such as are of general interest."

This association of matter being well edited, sufficiently accounts for the satisfactory character of Mr. Minor's experiment. There was not, at that early date in the history of railroads, sufficient matter on the subject to fill a weekly journal of the generous size produced. Hence the necessity of a good choice of miscellaneous matter, and the wisdom of procuring it by arrangement, from so well-informed and popular a paper as the New York *American*. While the compiler does not find very much railroad information in No. 1, its contents are exceedingly readable, and he may be pardoned lingering awhile over some of its miscellaneous features, as well as those specially important to his readers.

In a summary of news from Mexico, occurs the familiar name of our time-honored contemporary, the *Journal of Commerce*, as that of the authority for an item. The literary review includes notices of David Brewster's "Life of Sir Isaac Newton," and of "A Memoir of the Life of Daniel Webster," by Samuel L. Knapp. A poet who failed of immortality staggered the editor with the prospectus of his heroic poem, "The Steamiad," to consist of one hundred books, the arguments to three of which are subjoined, because they show how one man was moved to great thoughts by what he heard and saw of the "kettle on wheels" which has revolutionized modern civilization. His arguments are entertaining enough:

BOOK I.—*Argument*—Invocation to the Muse.—Heaven.—Hell.—Thunder.—Hoboken.

BOOK II.—*Argument*—Description of the Abyss of Space.—Conference between Neptune and Pluto about creating a power which shall be more tremendous than any of Jupiter's creations, and wholly under the control of these conspiring deities.—The parties quarrel.—The god of fire thrusts his glowing palm into the face of the god of water, and the STEAM SPIRIT bursts into existence.

BOOK III.—*Argument*—Pluto and Neptune become reconciled to each other by the mediation of Æther, and they consult in what manner to render the power thus accidentally called into existence subservient and useful to them.—They call in Vulcan to assist them with his counsel, who proposes that the spirit be first confined to a body, and avers, that thus incarcerated, he would be easily subdued to their designs.—They approve of his suggestion, and Vulcan immediately furnishes a close iron cauldron, and the book concludes with the wailings of the confined spirit.

solidating the various sections of the dominion: There- by the dilligent researches of the *Iron Trade Review.*

It appeareth not to the contrary that the scribbler projecting the Steamiad remained a "mute, inglorious Milton."

Those were stirring times in Europe. England was agitating the Reform Bill; the king of Holland was giving trouble concerning the definitive settlement of the difficulty out of which had developed the independence of Belgium; France, scarcely emerged from the bloody Revolution of 1830, was in the throes of the constitutional changes necessary to the consolidation of the power of the citizen king; an unsuccessful insurrection in Poland had lately ended, and Greece had newly arisen into the family of nations. Apropos of this, the first issue of the AMERICAN RAILROAD JOURNAL contains an eloquent call, headed "Instruction to the Greeks," convening a public meeting at the Consistory Room of the Middle Dutch Church, corner of Ann and Nassau streets, New York, "for the purpose of coöperating with our fellow citizens in other places in the laudable effort of establishing at Athens, a literary institution for the instruction of the rising generation of that lately oppressed and truly interesting people." The list of names appended contains that of William C. Bryant. At home, slavery was agitating the counsels of Congress, but America's material progress was being honored in the great center of the world's commerce, significant of the after triumphs of her marine. The Grand Duchess Helene, of Russia, had lately been on board the New York packet-ship Ontario, Captain Sebor, at the London Docks, and had expressed herself in the highest terms of admiration of the beauty of the vessel, and of the superb style in which her cabin was fitted up. One cannot help wondering how long it will be before a similar incident is placed on record. The Equitable Insurance Company had just declared a dividend of three and one-half per cent., payable on the 3d of January, 1832; and the Farmers' Fire Insurance and Loan Company the same dividend, payable on the same day. At Baltimore, to the great satisfaction of the Baltimore *American*, measures were about to be taken immediately for the subscription of the capital requisite to build and put in operation a steam towboat, "of strong frame and great propelling power," and two steamboats had towed from the harbor of the Maryland port, through the ice, a fleet of outward-bound vessels, and had taken up, in like manner, several inward-bound.

But the reader is concerned more nearly with the state of the railroad industry of the United States on and about January 2, 1832, than with other matters, however interesting, and concerning which, only those subjects closely related with it, need to be mentioned hereafter.

The editorial opinion at the time was one "fast gaining ground in this country, that railroads will, in a great measure, supersede canals, and therefore hasten the construction of a few important lines, through those parts of the country where the amount of business will warrant the undertaking." Again: "It will be the aim of the publisher to show, what he thinks may be shown conclusively, that for practical purposes, railroads are far superior to any other mode of internal communication; and that they must, in a few years, entirely take the place of canals, where new works are to be constructed."

To inform his readers on a subject destined to be of such vast importance, Mr. Minor began a series of illustrated articles giving "a concise history of the introduction of railroads into England (which appears to have been as early as between the years 1602 and 1649, in the vicinity of Newcastle-upon-Tyne), with the various improvements, down to the present time; and to trace their introduction into, and peculiar adaptation to the business and climate of this country."

The following is given as the list of railroads in process of construction at the time, several of which were in part finished, and in successful operation:

Baltimore and Ohio—whole length, 250 miles—60 miles completed and in use.

Albany and Schenectady—16 miles in length—12 miles in use.

Charleston and Hamburg—135 miles in length—about 20 miles completed, upon which the United States mail is carried.

Mauch Chunk, completed and in use, 9 miles.

Quincy, near Boston, now in use, 6 miles.

Ithaca and Owego, 29 miles.

Lexington and Ohio, 75 miles.

Camden and Amboy, 50 miles.

Lackawaxen, 16 miles.

The following were then making, or soon to be commenced:

	Length in miles.
Massachusetts, from Boston to Hudson River	200
Ithaca and Catskill	167
Boston and Brattleboro	114
Columbia, from Philadelphia to Little York	96
Baltimore and Susquehanna	48
Boston and Providence	43
Frankston and Johnston on the Alleghany	40
Baltimore and Washington City	38
Hudson and Berkshire	25
Frenchtown and Newcastle	16
Harlem	6
Richmond and Chesterfield	12
New Orleans	6
York and Maryland, Tuscumbia, Philadelphia and Norristown, Philadelphia and Chester, Philadelphia and Delaware	distance not known.

Elizabethtown and Somerville Railroad in New Jersey.

At the same time notice had been given of application to the legislature of New York, at the session about to be opened, for railroads in different sections of the State, with an aggregate capital of over forty-two millions of dollars.

Of these projects, one is intelligently and powerfully advocated by the RAILROAD JOURNAL. The writer opens his argument in a good, old-fashioned way. He says: "Perhaps no one of the numerous applications which will be made to the legislature of this State, at its ensuing session, is entitled to more respectful consideration than that which is to be made for a railroad commencing at Lake Erie, at some point between Cattaraugus Creek and the Pennsylvania line and terminating in this city; passing through the southern tier of counties, and crossing the Hudson at some convenient place." The summary of his argument is thus expressed: "With one principal railroad through the southern part of the State, and several lateral roads from the canal, every step would be taken towards, and not from, market, as would be the case if the main road was on the north route, and the others intersecting it from the south." The time was ripe for internal improvements on a grand scale, to be effected in the Empire State, and, as has been shown, the people were prepared with over forty-two millions of dollars to make

tion thus described on page 3 of the issue: "The cut at the

suggestion, and Vulcan immediately furnishes a close iron cauldron, and the book concludes with the wailings of the confined spirit.

railroads between designated points. The sanction of the legislature was all for which they were waiting. Evidently the inhabitants of New York State appreciated the advantages presented by the new mode of communication, demonstrating, as so often before and since, their practical sagacity and enterprise. Moreover, a journal specially devoted to railroad interests could not have been started at a time more opportune, and in a place more eligible than the greatest center of population in a commonwealth alive to the advantages and possibilities of a scheme connecting the majority of its counties with the metropolis, by the quickest means. The sanction of the legislature was asked on twenty-five projected roads, the chief of which were the following:

From Lake Erie, through the southern tier of counties, to the Hudson River, crossing a ferry, and then down on the east side to the city of New York—capital $10,000,000.

From New York to Albany, on the east side of the Hudson.

From the Hudson River, or from Schenectady to Buffalo, by the most convenient route, with branches connecting therewith the most important villages as shall not be on the main route of the railroad—capital $10,000,000.

Another, also from Albany to Buffalo—capital $7,000,000.

From Buffalo to Cayuga Lake, or the outlet thereof—capital $3,000,000.

From Utica to Cayuga Lake—capital $2,000,000.

From Rochester, through the Tonawanda Valley, to the Alleghany River—capital $1,000,000.

From Brockport, on the Erie canal through Batavia to or near Olean, Chatauqua county—capital $800,000.

From Schenectady to Utica—capital $2,000,000.

From Albany, on the west bank of the Hudson, or a more westerly route, to Catskill—capital $700,000.

From the City of New York to Manhattanville and Westchester, Putnam and Dutchess counties—capital $500,000, with privilege to increase.

From Watertown, Jefferson county, to the Erie canal, at Rome, and also to Lake Ontario or the River St. Lawrence—capital $500,000.

From Geneva to Ithaca, a continuation of the Canandaigua and Geneva Railroad—capital $500,000, with privilege to increase to $800,000.

From Oswego, Tioga county, to connect the Ithaca and Owego with the Lackawanna Railroad at the Pennsylvania line, near the Great Bend—capital $300,000.

From the foot of sloop navigation via the St. Lawrence to Lake Champlain—capital $1,000,000.

(*To be continued.*)

Finances of the Oregon and Transcontinental Company.

THE following is the last financial statement as to the condition of the Oregon and Transcontinental Company:

The committee appointed by the Executive Committee of the Oregon and Transcontinental Company to examine the assets and liabilities of the company and report thereon would respectfully represent to your committee that, in response to a suggestion in which they heartily concurred, Mr. R. G. Rolston was by them requested to join the committee and take part in the investigation. The committee was organized by the appointment of Mr. E. P. Fabbri as Chairman and Secretary, and at the earliest moment proceeded to the investigation of the company's affairs. The matter of the investigation being of an intricate character, and requiring many meetings, much time has necessarily been taken by the committee in arriving at the substance of their report. Inasmuch as the business and affairs of the company had been largely under the control and management of President Villard, his absence, in consequence of severe illness, during the examination has greatly interfered with the committee's labors and has prevented their making a report as satisfactory in detail as they would have desired. The committee would report:

That the assetts of the company, as shown by the books and from the certificates of parties holding securities as collaterals on loans, as well as the actual count of such securities as are in the possession of the company, are as follows:

	Shares.
Oregon Railway and Navigation Company	132,027
Northern Pacific preferred	153,700
Northern Pacific, common	147,934
Wisconsin Central stock	18,714
Milwaukee and Lake Winnebago preferred	2,775
Milwaukee and Lake Winnebago common	2,360
Oregon and California stock, preferred	150
Oregon and California stock, common	400
Oregon Iron and Steel Company	1,500
Oregon and California second mortgage bonds	$2,000,000 00
Lands earned and other real estate as per ledger	236,363 55
Oregon Improvement Company	514,128 33
Puget Sound Railroad under construction and not bonded	421,022 42
Northern Pacific Railroad Company, balance of account	1,240,206 42
Cash	195,927 52

And the liabilities of the company from the best sources at the committee's hands are shown to be as follows:

Bills payable	$10,562,500 00
Credited vouchers, as reported by treasurer	396,733 33
Oregon Railway and Navigation Company	48,895 41

The committee are informed that the bonds yet to be received from branch lines will meet the requirements for construction. Your committee has deemed it proper to state the assets at their face or share value, not considering it within their province or desirable to affix market values which are constantly liable to fluctuation.

In closing the report, the committee desire to express their appreciation of the readiness on the part of the officers and employés of the company to facilitate as much as lay in their power, the task assigned to the committee.

E. P. FABBRI,
WILLIAM ENDICOTT, JR.
R. G. ROLSTON.

NEW YORK, Monday Dec. 31, 1883.

FREDERICK BROUGHTON, late general manager of the Great Western Railway, P. O. box 38, Hamilton, Ontario, is offering his railway library for sale in one lot. The catalogue can be procured from that gentleman. As it represents a collection made during thirty-four years' management of railways, its interest is extraordinary. The books announced embrace, amongst others, bills in Parliament; evidence before committees; acts of Parliament; reports of and evidence before Royal commissions and Parliamentary committees; the proceedings of the English Clearing House, in MSS., for ten years; traffic and working agreements between many English companies; awards of arbitrators and umpires in cases of reference; Bradshaw's Manual, for twenty years; the *Railway Times*, for twenty years; twenty-five volumes of rare pamphlets on railway finance, management, etc., and several volumes of railway rules and regulations.

IN "A Temple of the Art Preservative of All Arts," Matthews, Northrup & Co., Buffalo, New York, have produced a pamphlet which is a luxury to see and to handle, and the briefly-written pages of which are suggestive to publishers of all grades. It is a description of the establishment of the publishers, accompanied by a calendar for the present year. The opening sentences show the sense which these gentlemen have of the quality of their pamphlet, one of which, by the way, is not at all exaggerated: "To you, O friend! (whose name we trust is Legion) lover of the beauteous, patron of letters, promoter of the arts, admirer of our Art, greeting!" By all means get a copy of "A Temple, etc.," if you can do so.

EVERY man is the son of his own works.

Tramway.

[The English word "tramway," now used universally in every English-speaking country excepting the United States, is adopted as the name of this department, because it is of greater convenience, being more specific in its meaning than "street railway."]

American Street Railway Association.

President.—William H. Hazzard, Brooklyn, N. Y.
First Vice-President.—James K. Lake, Chicago, Ill.
Second Vice-President.—George B. Kerper, Cincinnati, O.
Third Vice-President.—D. F. Longstreet, Providence, R. I.
Secretary and Treasurer.—William J. Richardson, Brooklyn, N. Y.
Office of the Association, cor. Atlantic and Third Avenues, Brooklyn, N.Y.

We observe that on at least one of the leading tramway lines of this city, no passenger is permitted to open the door nearer the horses. This, as it seems to us, is a commendable restriction, guarding the public, in some degree, against those draughts which, during the winter months, sweep with chilling and dangerous consequences through cars in which the provision indicated is not made. Its enforcement on lines carrying very many passengers, the Third Avenue, for example, would cause delay and inconvenience during certain hours of the day; but in all cases where these consequences would not follow, there seems to be no good reason why the example set by the management of the Second Avenue line should not be followed.

The problem of heating street cars cannot yet be regarded as settled, so many practical men objecting to the use of the stove, because finding in it disadvantages which more than outweigh the gain to the public comfort that follows its introduction. While this remains true, there is apt to be considerable value in the suggestion that only the back entrance to the car should be opened, excepting in cases when for greater ease in taking on and setting down passengers, this course is inexpedient.

The leading feature in the condition of the street car business at the present time, unquestionably is the prominence of the question, Shall or shall not the cable system be applied in New York City? As our news columns demonstrate, the probability is that the answer will be in the affirmative. This much is certain, that the subject of the advisability or non-advisability of the innovation is being both intelligently and earnestly discussed.

In this season of the year particularly, when the proverbial trials of street-car horses are at their height, it does seem altogether too bad that, in the interest of these poor brutes, attention should be called of a necessity perceived every day, to the expediency, not to say duty, of adherence to the wholesome rule which prescribes that cars shall not be stopped anywhere excepting at crossings. Perhaps 'tis as well to blame stupidity for what seems very much like cruelty in those offenders against the rights of our noblest dumb servants, who would stop them and compel the strain of restarting oftener than is prescribed in the regulation to which reference has been made.

With the present number, the very practical series of articles on painting street cars comes to an end. Their value is of the highest to those who either make or use cars, and we advise such who do not already possess the three parts constituting the series, to make sure of an excellent possession by sending to the office for the missing number or numbers.

A verbatim report of the second annual meeting of the American Street Railway Association, held in Chicago, October 9 and 10 last year, has just reached us. It is handsomely printed, and well done in every respect; and will certainly be in large demand, as it deserves to be. This very valuable pamphlet of 144 pages may be procured at the office of the Association, corner Atlantic and Third avenues, Brooklyn, New York.

History of Traction By Cable.

The following is the first of a series of articles written for the American Railroad Journal by Paul Van Der Voort, Secretary of the Lighthall Cable Traction Company, Washington, D. C., whose facilities for procuring information are of the best, as the subjoined communication demonstrates. We bespeak for Mr. Van Der Voort that widespread, intelligent interest in his articles, which is due to their subject and the command of material and capability of handling it with skill and force which constitute his peculiar fitness for their authorship:

The history of cable railway invention dates back almost to the commencement of the present century. The amount of labor and thought expended upon this way of propelling cars or carriages is incalculable; the uses to which the various inventions have been put are numerous and ingenious.

The idea of propelling cars by an endless cable was even earlier than the invention of railways and railway steam engines. That the system has not been placed in general operation throughout this country is due to a variety of causes. That the cable method has not entirely superseded the slow-moving horse, is due to the long time required to perfect improvements in inventions heretofore made, to the fact that until recently a full knowledge of the system existed only in one city, which is remote from the center of population, and largely because until the present day, no person possessing the necessary ability, has advocated with power and conclusive force the great advantages and permanent value of the cable system. It took time to study deeply and profoundly into the various methods used in the past, as

the public at large, and even engineers, were in utter ignorance in regard to what had been done and the inventions which years ago had been patented in regard to this system of moving cars. No prior invention or improvement has ever been reached without deep thought and earnest search, and the more or less thorough knowledge of the art to which it relates, in anterior days. Moreover, to simply invent or originate an improvement is not enough. The true inventor must be practical, and possess the business tact and knowledge sufficient to properly place his invention before the public—to clearly explain his improvements, and above all to reap the fruits of his patient toil and devotion to the objects to be attained.

That after all these years there should only be cable railways in operation in a few cities in the most progressive nation on the face of the globe, will seem strange to your readers, when they learn that all the principal features of railways were patented long since, and were put in practical operation and attained a speed which has not been deemed possible in these later days. Especially in England was this true. No invented system ever reaches complete perfection until it has been years in practical operation, and until its countless details have been thoroughly tested by actual operation, and when the money forces are applied. The mighty engine and printing press, and any of the magnificent structures which have been invented, when standing idle and inert are very different to the eye from the same when placed in motion; when the lever is touched and all the component parts start into action, then the whole structure becomes a thing of beauty and conveys the idea of life and power fully exemplified.

The question of cable railways is now being thoroughly agitated throughout the country. The records in the Patent Office also demonstrate that many able inventive minds are deeply engaged, and that thorough study is being given to this branch. There is no doubt that the day is not far distant when the horses and mules, now pulling cars, will give way to the endless cable method, as the stage coach was superseded by the swiftly-moving locomotive. The question of accelerated speed alone will solve the problem. Operators and owners of street car lines are giving their attention to the cable system, and they all recognize the fact that they must come practically to the immediate consideration of this question.

Your readers will no doubt be interested in the early history and progress of invention in this direction, and the constituents of your valuable journal (the only recognized authority on street railways), will no doubt be glad that you have taken the trouble to have the question discussed in your columns. The writer will do this fairly and impartially, and state facts as he knows them, without prejudice, and in all cases with his authority in hand to fully sustain his position.

Some persons imagine, or seek to make people believe, that they are the original inventors of the system of propelling cars by an endless cable, moving in an underground slotted tube. A careful study into the art would have soon satisfied them that such was not the case. It is fully realized that many of the descriptions of early inventions are found in very rare publications which are extremely difficult to obtain. The collection at the writer's service was procured after careful search in this country and in Europe, and he does not know that a similar one exists in a combined collection. In the matter of railway inventions, especially in early days, it includes a full collection, with drawings to illustrate the same. The patents described in these books are old, and have long since lapsed, but the student and inventive mind should know before devoting study, means, and time to invent something new, that the idea had been fully met years before, and the fact published in the magazines of the day devoted to such topics.

In another communication, the writer will give a history of the early inventions of cable railways, and some details in regard to their operation.

(*To be continued.*)

Painting Street Cars.

BY AN OLD PAINTER.

III.

In a former chapter I called attention to a few of the colors used on street cars, and the harmonious combinations of the same. It is now my purpose to speak more particularly of the combination of colors for grounds, and the striping colors upon the exterior of street cars.

Some few years ago it was the custom to paint almost all cars in light colors, such as straw, cream, drab, etc., but the experiments made by first-class painters proved conclusively that darker colors were just as applicable if not better in many respects than light colors. A street car, though subjected to hard usage, in most cases by ignorant washers and cleaners, is not so badly used as the cars on steam roads, for they are generally housed when not in use, while it is seldom that a steam road furnishes cover for their cars; besides, the street car is not subjected to an atmosphere of sulphurous fumes, or pelted with gravel and sparks. Therefore, the arguments which have been advanced in the trade journals relative to light and dark colors do not apply to street cars. The street car is simply a wagon or omnibus in another form, and may be treated, so far as the painting is concerned, in a similar manner.

The use of light colors on wagons or carriages is very limited, as the wagon painter has found that other colors will outwear them, as a rule. Vermilion, bronzed greens, blues, black, etc., are the favorite ones, although cream and straw-color may be added to the list, for wagon work, while stages or omnibuses are mostly painted white. But the painting of stages in white is not so much on account of durability as it is to make them showy, and to lighten their otherwise heavy appearance. The monstrous furniture vans, now so numerous in our large cities, will be found painted in dark colors, with gold lettering, etc., upon their sides, and they are made far more durable in the painting by the wagon painter than the average street car, though these "big wagons" are seldom housed. The reason of this is that the work is better done. More varnish is used upon them, and the coloring, instead of being oily, or closely allied to the paint of the house painter, is, as it should be, japan colors, over a well-made foundation. The average car, when new, receives at most but three or four coats of paint, which is made porous, from loss of oil by absorption into the imperfectly filled pores of the wood, and the two coats of varnish are therefore sucked in

and virtually destroyed. It is therefore necessary, as said in a previous chapter, for the car painter to take a few lessons from the wagon painter, in order to make durable work.

Dark colors are being used now on many steam roads with satisfaction, but there are many who never gave a thought to one of the principal reasons of their durablity over light ones, which is, that a lesser quantity of oil is used in mixing them, for the dry pigment being used instead of keg lead ground in oil, the painter will use more japan or varnish, by which the paint dries harder and is not so readily absorbed.

Vermilion will turn dark quickly, if it be mixed with oil, as is seen in the work of the house painter, who depends upon oil principally in all his work, but if a quick-drying varnish, japan, or japan gold-size be used, the color will be far more durable. Vermilion is a good color for side panels, and will appear more brilliant if a green stripe be put over it. The green should be bright, and of a yellowish hue, rather than bluish. This too will be augmented by a fine line of white. The combination of red, green and a very little white will be found a pleasing one, and I think it the best that can be made. The striping on a panel should be *en relief* to appear well (as shown in cut), then the colors, put in as above, and a very handsome panel will result. The top stripe may be white, with black letters, shaded with light and deep orange; the sunk bottom white, with an outline letter shaded the same.

Umber colors are very durable and they make very handsome panel colors.

Umber is a natural dryer, and the color will dry hard to prevent absorption; a little oil may be judiciously added to paint having umber for a base.

Olive brown is formed by adding lemon yellow to the umber.

Chocolate color is made by adding a little lake or carmine to umber.

Burnt umber added to white forms drab.

Salmon color is made by adding yellow, white and red to umber in small quantities.

Orange-colored striping looks well on umber, put on as directed for green on red, set off by fine lines of white.

Sienna colors are also excellent ones, and such as tan color, leather color, Bismarck brown and chamoline will make good colors for car panels. The latter color is made of three parts sienna, one part white and one part lemon yellow.

The ground for sienna may be made of yellow ocher, which is a durable pigment and inexpensive. The striping on sienna colors is governed by the depth of the ground. Drab, green or orange colors will harmonize with them.

A beautiful color for cars will be found in golden ocher, an earthy pigment of great durability. Light and dark red may be used for the striping colors, or light and dark green, and black fine lines. Milan green, as well as its tints with white, is another good color; it has great body or covering power, and will give good satisfaction in coloring. Gold striping or its imitation, and red fine lines will best match it in its purity.

Gold lettering shows off nicely on green, and this should be shaded in vermilion and carmine, or in light green with white lights.

Lake colors appear well, but it is not advisable to use the pure lake, as it is fugitive, no matter how mixed. Take Indian red or Tuscan red to form a solid foundation, then glaze over with carmine or Munich lake. Green striping will look well, but gold is preferable. Gold will harmonize with almost any color, but its expense is one of the drawbacks to its extensive use.

Paris green is a poor color. It is difficult to either mix or apply, and its use is now almost obsolete. It may be used however to the best advantage by mixing as follows: Mix one pound of dry color with one part japan gold-size, two parts rubbing varnish, and three parts raw oil; add one ounce of sugar of lead, well pulverized, and grind fine in the mill. The ground for Paris green must be solid, for the color is transparent.

In closing my essay on colors, I must call particular attention to the fact that the painter should not use any great number of colors on one job; a few well-selected ones will give a better result. It is only the backwoodsman or the Southern darkey who would be pleased to see a dozen flashy colors in combination. The best effects for the average eye is that of harmony by analogy—one color with its several tints and shades—or, in other words, monochromatic. However, the street car painter may be allowed a little more freedom, for his vehicle should be a prominent one among those which crowd a city street, yet it should be neat and, above all things, be lettered plainly and well, that the stranger may know at a glance if he shall board it to reach a desired location or not.

THE END.

Corrected Returns from Boston.

A SUBSCRIBER residing in Boston does us the kindness to correct certain figures published in a recent number, to show the magnitude of the street car system in Boston. The following statement follows that of the railway commisssioners of Massachusetts, and is the returns from September 30, 1882:

	Cars Used.	*Men Employed.*
Metropolitan R. R. Co.	357	1,433
Union Railway Co.	162	554
Highland St. Railway Co.	94	335
South Boston R. R. Co.	83	366
Middlesex R. R. Co.	78	244
Lynn and Boston R. R. Co.	48	181
Charles River Railway Co.	10	35
Total	832	3,148

Our correspondent adds that there has been some increase in cars and men during the past year.

EXPLANATIONS of the workings of a new plan for elevated railroads have just been made before the Rapid Transit Commissioners by L. J. Wing, of No. 50 Cliff street, New York. In this scheme the cars are suspended below an elevated superstructure, and are moved by an endless wire cable. The bottom of the car will be twelve feet above the surface of the street, or on a level with the second floors of ordinary buildings. It is proposed to have no stations in the street, but to provide waiting-rooms in the second stories of buildings. People will enter the car by a door in the center, which will open on slides just opposite the station platform when the car stops. By this feature it is claimed that there can be no obstruction to light and air, and no inconvenience to passengers who do not wish to climb higher than the second story to reach a station.

TRAMWAY NOTES.

MR. SHERMAN, of the Chicago Elevated Passenger and Automatic Mining Railways, says that the chief claim of superiority in his system of road is cheapness of construction. Not more than 1,200 tons of iron are required per mile on any city street, the cost being about $74,000. No cross ties are used, the rails being laid on wooden cushions inserted in channel iron stringers twenty-four feet above ground. The cars run between the rails, and are supported by trucks placed above the windows. The propelling power is applied either by an endless cable underneath the car, or by an electric wire suspended just above the car roofs. When empty, the car is two-thirds heavier at the top than at the bottom, but when weighted with passengers, it is nearly balanced. The leverage of the wheels and the resistance of the atmosphere are therefore equally divided. The car wheels are double flanged and have oscillating axles, which prevent friction at curves in the rails. It is claimed that, in case of accident, the car cannot leave the track. A few weeks ago Mr. Sherman received a letter from James Gamble, No. 2 Wall street, New York, asking for estimates of the cost of construction for an elevated railroad in this city and for a road from Boston and Hartford to New York, Jersey City, Trenton, Philadelphia, Baltimore and Washington, to connect these places with Harrisburg, Pittsburg, Wheeling, Cincinnati, Chicago and St. Louis. Charles W. Tankersley is named as the promoter of the scheme.

THE London *Times* announces the death of Mr. W. Sheldon, who more than half a century ago had a large share in instituting regularity of communication between England and Scotland by means of stage coaches. Deceased was born at Kendal, Cumberland, in 1803. After a long connection with the coaching traffic, during which he personally took charge of the coaches from Birmingham to Carlisle, etc., he removed to London, and upon the advent of railways, devoted his energies to the development of urban passenger traffic. In connection with the London Omnibus Company, he soon established an excellent and cheap omnibus service. He also joined the notorious George Francis Train in building and working the first tramway in London. He disapproved, however, of the raised rail, and this eventually wrecked Train's experiment. Subsequently, Mr. Sheldon went abroad, and, with the assistance of his son, built and set in working order tramways in Brussels, Copenhagen, Madrid, Geneva, Bucharest, and Bremen. These were very successful, and the tramway question again came up in England. Deceased was associated with the companies which built the Glasgow, Aberdeen, and other tramways. He was an advocate of the system of light steam tramways for the development of country districts. Mr. Sheldon, who was a member of the Society of Friends, was known privately for his practical benevolence.

THE proposed route of the Lexington avenue cable railway, this city, is that it start in Harlem and run in a straight line down the surface of Lexington avenue to and through Irving place. After crossing Fourteenth street it will cut through private property to Lafayette place. At Great Jones street the surface line will end, and an inclined plane will lead through two blocks of private property, becoming at Crosby street an elevated cable road. The elevated road will run down Crosby street, and at Grand street will turn through private property to Elm street, from there turning through private property to a station, which will stand on the west side of the City Hall station of the present elevated road. The line will then cut through French's Hotel and other private property to William street, continuing along William street to Wall street, where the elevated line will end. From Wall street the line will follow the surface along Beaver street to the front of Bowling Green, and make a circle around State and Whitehall streets to Beaver street.

ON the evening of the fifth of January, a fire was discovered in a shed owned by the John Stephenson Company, surface car builders, this city, and used for the storage and seasoning of lumber. The shed was fifty feet wide by forty feet deep, and was filled with valuable lumber, chiefly oak and maple. An overheated stove set fire to the lumber, which burned fiercely. It was nearly an hour before the flames were under control. The shed was entirely destroyed, together with much of the costly lumber stored in it. The loss is estimated at ten thousand dollars, which is only partly covered by insurance.

THE railroad from Liege to Maestricht, says a Belgian paper, has obtained permission to put upon its track between Liege and Vise small trains made up of cars of the ordinary horse car pattern. These trains stop between stations, and they are found to be a great convenience for the small villages along the route. The object of the company in inaugurating this system of conveyance was to prevent the establishment of a competing street car line.

A BILL in equity has been filed in the United States Circuit Court by the Cable Railway Company against the Market street Cable Railway Company, Leland Stanford, Charles Crocker, Charles F. Crocker, W. V. Huntington, and Nicholas T. Smith, praying that the defendants be restrained from making and using any truck or dummy with a gripping device attached thereto embracing the invention of plaintiff, and that the same may be delivered and destroyed, etc.

THE members of the American Society of Civil Engineers, have inspected the cable system of cars on the Brooklyn bridge. Col. Paine explained his grip in full, and the members expressed themselves as being much pleased with it.

LUMINOUS paint has been applied to harness with desirable results. At night the position of the horse is clearly indicated, and it does not appear that the animal is alarmed in the slightest by his bright equipment.

IN the Court of Special Sessions New York, recently, a man was found guilty of a misdemeanor in throwing snow and ice on the tracks of the Christopher and Tenth street Railroad and fined twenty-five dollars.

PRESIDENT C. B. HOLMES, of the Chicago Cable Road, states that after the heavy snow the cable road in that city worked perfectly, while on the horse roads there was much trouble and delay.

DR. JOHN C. PETERS, in an article published in the New York *Medical Journal*, says that "pink eye" is self-limited ordinarily, so that palliative treatment is all that is required.

List of Recent Patents for Inventions Relating to Tramways.

[Articles describing the more important of these follow this list.]

BEARING DATE DECEMBER 4, 1883.

289,375. TRACE-FASTENER: William L. Beach, Webster City, Iowa. Filed Sept. 21, 1883.
289,402. HORSESHOE: Isaac Fenno, Boston, Mass. Filed Jan. 29, 1883.
289,403. HARNESS-TRACE: George Shattuck Gates, Athol, Mass. Filed Sept. 5, 1883.
289,406. APPARATUS FOR CHECKING AND CONTROLLING HORSES: Henry Gottheimer, Brooklyn, N. Y. Filed Aug. 13, 1883.
289,452. BRIDLE-BIT: E. Eugene Sargeant, Newark, N. J. Filed Sept. 25, 1883.
289,504. HORSESHOE: Daniel Crane, Seneca Falls, N. Y. Filed June 30, 1883.
289,519. TRACE-SUPPORTER: George F. Eberhard, Cleveland, and John E. Renz, Medina, Ohio. Filed Aug. 8, 1883.
289,527. GRIP OR CLUTCH TO BE USED ON ENDLESS-CABLE WAYS: William A. Gilday and Thomas M. Heckman, Philadelphia, Pa. Filed Sept. 7, 1883.
289,563. TRACTION-ROPE RAILWAY: John H. Robertson, New York, N. Y. Filed May 23, 1883.

BEARING DATE DECEMBER 11, 1883.

289,904. MOVING STREET-CARS ON CURVES: Noble Andrew Fisher, Sacramento, Cal. Filed Dec. 28, 1882.
290,003. CABLE-GRIP APPARATUS: Henry Dods and Frank Hindes, Virginia City, Nev. Filed Oct. 16, 1883.
290,091. HORSESHOE: Joseph Nester, Wapakoneta, Ohio. Filed Oct. 30, 1883.
290,096. BOOT FOR HORSES: James O'Brien, New York, N. Y. Filed Oct. 12, 1883.

BEARING DATE DECEMBER 18, 1883.

290,198. HORSE-BLANKET FASTENER: Alexander F. Armstrong, Edinburg, and Milo K. Waite, Northville, N. Y.; said Waite assignor to Lewis Balch, Albany, N. Y. Filed June 13, 1883.
290,263. HORSE-BRUSHING MACHINE: Ellis Pennington, Philadelphia, Pa. Filed Oct. 20, 1882.
290,591. HAY-CARRIER: William Louden, Fairfield, Iowa. Filed Sept. 15, 1883.

BEARING DATE DECEMBER 25, 1883.

290,661. HAME AND COLLAR FASTENER: John F. Becker, Ward, Minn. Filed June 19, 1883.
290,673. HORSE-COLLAR FASTENER: William L. Fries, Milton, Pa. Filed Oct. 3, 1883.
290,707. CABLE-RAILWAY APPARATUS: Charles W. Rasmusen, Chicago, Ill. Filed April 23, 1883.
290,803. BRIDLE-BIT: Conrad Scherling, Guttenberg, Iowa. Filed Oct. 23, 1883.
290,826. COMBINED BRIDLE AND HALTER: Merritt F. White and David G. Sheridan, Bridgeport, Conn. Filed Jan. 23, 1883.
290,859. BRIDLE-BIT: Clarence A. Chandler, East Bridgewater, Mass. Filed April 6, 1883.

Advertising Device for Cars.

AN invention relating to improvements in display cards for street cars has been patented by Ernest Kitz, of Indianapolis. Its object is to provide a canvas belt to move on pulleys, with mechanical arrangements for moving the same, and thus bringing into view alternately the various signs, cards, or notices printed thereon. The precise means by which this is done are hereafter detailed, so far as is practicable without the use of cuts.

The device is attached to the car. A chain wheel is mounted on the axle of one of the car wheels, with sprockets to receive the links of an endless chain, by means of which, power is communicated to a chain wheel mounted on a shaft, and attached by means of hangers to the bottom of the car, and provided with a bevel cog-wheel to engage with a bevel cog-wheel mounted on an upright shaft, supported at each end by means of journaled boxes to the side of the car, said upright shaft extending upward to the place of display, and these provided with a flange pulley, around which a belt of canvas passes, which belt, extending to the opposite end of the car, revolves on an adjustable pulley. This adjustable pulley is attached to the car and pivoted at two points to a sliding frame, which slides transversely between two bars, and is provided with an adjusting screw, which is provided with a stationary nut and handle, by means of which the adjustable pulley before mentioned is adjustable to the length of the canvas belt. The chain wheel mounted on the axle of the car wheel is constructed in halves, with flanged ears to receive bolts, by means of which the halves are united into a complete wheel.

The canvas belt being supplied with the desired display cards, and stretched over the flanged pulley and the adjustable pulley, and brought to a proper tension by means of the adjustable screw provided in the device, the operation of the improvement is as follows: The car being in motion, the axle supporting the chain wheel revolves, imparting motion to the endless chain, and thus operating the chain wheel. This chain wheel being mounted on the shaft attached to the bottom of the car, turns the bevel wheel which engages with that bevel wheel mounted on the upright shaft, thus imparting motion to the pulley on which the canvas belt revolves. The effect of this is to bring into the view of persons both inside and outside the car, such signs, cards or notices as are alternately attached to the canvas belt.

This ingenious manner of multiplying the value of street cars as an advertising medium, will be more fully explained by the inventor, to those who apply to him for the information. Its object certainly commends it to attention in these days of multiform ways of making business announcements.

THE Industrial Publication Company, of New York, have just published a pamphlet entitled, "How to Become a Good Mechanic." Written by "An Old Apprentice," it is a practical guide to mechanics who love knowledge, and who wish to acquire those branches which will be of the greatest use to them. The little book is pervaded with good sense, and has "character." Its writer is dogmatic and straightforward to a degree which fastidious people might call rude, but we are not at all disposed to quarrel with qualities which superadd to the essential interest of this little work. Most readable and of great practical value, we recommend "How to Become a Good Mechanic" without reserve. While encouraging and likely to be of great service to the class of persons for whom it was written, nobody can read it without profit, not to say entertainment.

VOL. XI of the *Washington Law Reporter*, is completed with the issue of December 29, 1883. Its editor, George B. Corkhill, gives his brother lawyers, in this weekly publication, a well selected array of various important legal decisions, made in many courts.

OUR enterprising contemporary, *The Free Press*, of London, Canada, is advertised, among other ways, by an excellently printed and illustrated office calendar for 1884. This is one of the most desirable things of the kind we have seen.

GO into the country to hear what is the news in town.

New Inventions.

IMPORTANT TO INVENTORS.

THIS department of the AMERICAN RAILROAD JOURNAL is devoted to descriptions of the many and interesting New Inventions applicable to railroads, and in order to make it as complete as possible, inventors whose improvements properly come under this description, are invited to send us a detailed account of the same. This should consist of facts only, presented in clear and concise language, written only on one side of the paper, and the sheets numbered consecutively. In all cases in which it is desirable and practicable, the written description should be accompanied by a cut or cuts illustrating the invention. This or these should be marked distinctly on the bottom, with the name and address of the sender. All cuts received are preserved at this office, or returned, if desired, to the person sending them to us for use. As we have an engraving department we are prepared to make cuts, and furnish estimates of our charges for the same to those persons who write us for such particulars. That we may estimate exactly and without delay, it is necessary that we have sent to us, a photograph of the Model and a copy of the Specifications.

The reader of course understands that the editors reserve their inalienable rights to decide what "copy" they shall use, what changes shall be made in it, if any, and when they shall use it; but they guarantee the impartial consideration of every description sent them.

Descriptive articles relating to Tramways will be placed in that department.

List of Patents for Inventions Relating to Railways.

BEARING DATE DECEMBER 4, 1883.

289,377. RAILROAD SWITCH AND FROG: Henry Berlin, Pittsburgh, Pa., assignor to himself and Frederick Austin, same place. Filed July 18, 1883.

289,379. TRACK-BOLT LOCK: D. Franklin Blighton, Buffalo, N. Y. Filed May 19, 1883.

289,385. RAILWAY-SIGNAL: George F. Carlile, Bloomington, Ill. Filed June 14, 1883.

289,399. CAR-COUPLING: Charles Bell Emerson, Lynn, Mass. Filed Sept. 25, 1883.

289,407. CAR-COUPLING: Richard. E. Gray, Williamsport, Pa. Filed Dec. 8, 1882.

289,431. BRAKE-BEAM: A. H. McAlpine, Columbus, Ohio. Filed Aug. 24, 1883.

289,445. GRAIN-CAR DOOR: Francis Pond, Hinsdale, assignor to himself and W. M. Pond, Chicago, Ill. Filed Aug. 2, 1883.

289,465. RAILWAY-RAIL JOINT: Sol. F. Stever, Fairfield, Iowa. Filed Dec. 29, 1882.

289,474. CAR-BRAKE: Byron Van Wie and John Taylor, Troy, N. Y. Filed April 12, 1883.

289,529. CAR-COUPLING: Aaron B. Groff and Ambrose E. Strayer. Lilleyville, Pa., assignors of one-third to Oliver C. Groff, same place. Filed June 12. 1883.

289,530. COUPLING-LINK FOR RAILWAY-CARS: Allen Hackett, La Grange, Me. Filed Sept. 29, 1883.

289,611. CAR-COUPLING: Levi Isaac Bodenhamer, Kernersville, and William Edward Ashley, Raleigh, N. C.; said Ashley assignor of one-half of his right to said Bodenhamer. Filed Sept. 12, 1883.

289,614. CAR-PLATFORM: William Fuller Brown and Charles Lenard Haight, Poughkeepsie, N. Y. Filed Sept. 8, 1883.

289,617. CAR-COUPLING: Adoniram Judson Chapel, Arkansas City, Kans. Filed Oct. 1, 1883.

289,628. RAILROAD-RAIL: William M. Dayton, Waupaca, Wis., assignor to himself and Winfield S. Bemis, same place. Filed May 31, 1883.

289,633. RAILWAY-SWITCH STAND: Henry Elliot, St. Louis, Mo. Filed June 7, 1883.

289,657. CAR-STOVE EXTINGUISHER: Christ Hittinger, Dayton, Ohio. Filed Aug. 15, 1883.

289,677. RAILROAD-SWITCH: George McCall, Philadelphia, Pa. Filed June 5, 1883.

289,681. CAR-COUPLING: John K. McLeod, London, Ontario, Canada. Filed Sept. 19, 1883.

289,705. LOCOMOTIVE COW-CATCHER: William Phillips, Marshfiled, Oreg. Filed May 9, 1883.

289,712. CAR-WHEEL: David William Reese, Canal Dover, Ohio. Filed Oct. 4, 1883.

289,713. CAR-WHEEL: David William Reese, Canal Dover, Ohio. Filed Oct. 2, 1883.

289,726. SAFETY-GATE FOR CAR-PLATFORMS: Edwin L. Tevis, Philadelphia, Pa., assignor of seven-tenths to James N. Whelen, same place. Filed Oct. 18, 1883.

289,729. CAR COUPLING: William H. Thurmond, Forsyth, Ga. Filed Sept. 25, 1883.

289,739. AUTOMATIC SWITCH-SIGNAL: Algernon L. Wilkinson, Huntsville, Ala. Filed June 23, 1883.

289,741. METHOD OF CASTING CAR-WHEELS: William Wilmington, Toledo, Ohio. Filed Oct. 20, 1883.

289,770. RAILWAY-BRIDGE INDICATOR: Elam A. Gross, Camden, N. J. Filed July 6, 1883.

289,782. CAR-COUPLING: Frederick H. Rudd, Hebron, Nebr. Filed Oct. 6, 1883.

BEARING DATE DECEMBER 11, 1883.

289,806. RAILROAD-TIE: Thomas J. Bronson and Alexander Armstrong, Jacksonville, Ill. Filed July 20, 1883.

189,827. RAILWAY SIGNAL APPARATUS: Oscar Gassett, Boston, Mass. Filed Aug. 6, 1883.

289,852. CAR-COUPLING: Alfred T. Odell and John H. Cordell, Marshall, Mo. Filed Oct. 17, 1883.

289,866. SAFETY-BRIDGE FOR RAILWAY-CARS: Alphonso B. Smith, San Francisco, Cal., assignor to Solon Pattee, same place. Filed April 18, 1883.

289,895. ELECTRIC LOCOMOTIVE-ENGINE: Leo Daft, Greenville, N. J. Filed March 27, 1883.

289,896. ELECTRO-MAGNETIC BRAKE: Leo Daft, Greenville, N. J. Filed March 27, 1883.

289,897. CONDUCTOR FOR ELECTRIC RAILWAYS: Leo Daft, Greenville, N. J. Filed June 14, 1883.

289,898. CAR-COUPLING: James T. Dalton, Central Falls, R. I. Filed Oct. 3, 1882.

289,921. CAR-BRAKE: Hugh McCalip and Marshall M. Nye, Crawfordsville, Ind. Filed Aug. 23, 1883.

289,934. CAR-AXLE BOX: Fabian J. Roberts, Detroit, Mich., assignor of one-fourth to Henry A. Weber, same place. Filed Oct. 10, 1883.

289,953. AUTOMATIC RAILWAY-SIGNAL: Theophilus Arndt, Florin, assignor of one-half to Henry H. Heise, Columbia, Pa. Filed June 11, 1883.

289,970. CAR-BRAKE: William Brumble, Baltimore, Md. Filed Oct. 10, 1883.

289,977. REFRIGERATING-CAR: Warren A. Chase, Boston, Mass. Filed Sept. 29, 1883.

289,982. CAR-BRAKE: William Clayton, St. Louis, Mo. Filed Aug. 24, 1883.

289,985. CAR-COUPLING: David Pitkin Cory, Consecon, Ontario, Canada, assignor of one-half to Charles H. Osborne, Chicago, Ill. Filed July 2, 1883.

290,005. CAR-COUPLING: Michael J. Dougherty, Carbondale, Pa., assignor of one-half to John Burnett and Edward McHale, both of same place. Filed Oct. 3, 1883.

290,011. SPIKE-EXTRACTOR: John Ebbert, Rockaway Beach, N. Y., assignor to Philip A. Hall, Chicago, Ill. Filed May 5, 1883.

290,12. DEVICE FOR INCREASING THE TRACTION OF LOCOMOTIVES: Joseph Elder, Peoria, Ill. Filed Oct. 5, 1883.

290,041. VENTILATOR: David Groesbeck, New York, N. Y. Filed Oct. 5, 1881.

290,060. CAR-COUPLING: Dorsey P. Kahl, Lineville, Pa. Filed April 10, 1883.

290,086. CAR-COUPLING: Phineas E. Merrihew, Fairhaven, and Melville C. Poland and Edward F. Poland, Boston, Mass.; said Poland and Poland assignors to said Merrihew. Filed March 1, 1883.

290,097. CAR-COUPLING: Timothy C. O'Donovan, Walker's Mills, Pa. Filed June 28, 1883.

290,189. RAILWAY-CHAIR: August Ernst Mersiowsky, Myersdale, Pa., assignor of one-half to Nicholas Diedrich, Bloomington, Ill. Filed July 26, 1883.

290,194. SAFETY-SWITCH STAND: Geo. W. Horne, New York, N. Y. Filed June 12, 1883.

BEARING DATE DECEMBER 18, 1883.

290,209. RAILROAD-CHAIR: William P. Comstock, Jr., Pawtucket, R. I. Filed May 7, 1883.

290,241. DRAW-GEAR FOR RAILWAY-CARS: George Josephus Johnson and Eugene Howell Thomas, La Crosse, Wis. Filed Aug. 2, 1883.

290,243. CAR-COUPLING: John Rutherford Kirksey, Dysartville, N. C. Filed April 21, 1883.

290,269. AIR-BRAKE FOR CARS AND LOCOMOTIVES: Patrick Reilly, Mattoon, Ill. Filed Oct. 19, 1883.

290,276. CAR-COUPLING: Henry L. Shireman, Nazareth, Pa. Filed Sept. 27, 1883.

290,298. DUMPING-CAR: George J. Wheelock, Oakland, assignor of one-half to Napoleon Beauregard, San Francisco, Cal. Filed Sept. 28, 1883.

290,317. CAR-COUPLING: Clark E. Carr, Galesburg, Ill. Filed Oct. 5, 1883.

290,324. REFRIGERATOR-CAR: Theodore N. Ely and John W. Cloud, Altoona, Pa., and Edward B. Wall, Columbus, Ohio. Filed July 24, 1883.

290,330. CAR-COUPLING: Monroe Hunter, Attica, Ind. Filed July 12, 1883.

290,338. ELECTRIC RAILWAY-SIGNAL: George S. Maxwell, Louisville, Ky., assignor of one-half to Charles Knight Caron, same place. Filed Sept. 13, 1883.

290,344. ATTACHMENT FOR CAR-SEATS: Presley W. Morris, Ritchie Court House, W. Va. Filed Aug. 14, 1883.

290,356. CAR-BRAKE HANGER: John Rhoads, Philadelphia, Pa. Filed Oct. 25. 1883.

290,379. CAR-BRAKE: Lafayette Wilkerson, Scipio, Ind. Filed Oct. 31, 1883.

290,388. SIGNAL APPARATUS FOR RAILWAYS: Melville Cox Bragdon, Newton Highlands, Mass. Filed July 10, 1883.

290,391. TORPEDO-HOLDING ATTACHMENT FOR RAILWAY DANGER-SIGNALS: James A. Bonnell, New York, N. Y., assignor to the National Interlocking Switch and Signal Company, same place. Filed Feb. 9, 1883.

290,434. CAR-WHEEL: Adam Keil, Monongahela City, Pa. Filed Sept. 29, 1883.

290,452. CAR-COUPLING: Marcellus H. Merrill, New Lebanon Center, N. Y. Filed May 23, 1883.

290,516. PLATFORM FOR RAILROAD-CARS: Samuel M. Beery, Omaha, Nebr., assignor to himself and Isaac Mason Smith, same place. Filed Oct. 22, 1883.

290,518. CAR-WHEEL: Henry M. Boies, Scranton, Pa. Filed Oct. 10, 1883.

290,540. CAR-SIGNAL: George H. Cormack, Rockford, Ill. Filed June 4, 1883.

290,541. RAILROAD-CROSSING: John C. Coulter, Chesterton, Ind. Filed July 27, 1883.

290,542. LOCOMOTIVE-BOILER: Chas. B. Coventry, Chicago, Ill. Filed Nov. 7. 1883.

290,562. DEVICE FOR OPERATING STATION-INDICATORS: Samuel Forrester, Allegheny, Pa. Filed July 27, 1883.

290,569. CAR-COUPLING: Andrew J. George, Pulaski, and Thomas B. Turpin, Bloomfield, Iowa. Filed May 29, 1883.

290,582. CAR-SPRING: Chas. C. Hebbard, Knoxville, Tenn. Filed Oct. 13, 1883.

290,588. CAR-BRAKE: Alfred A. Lambrigger, Big Horn, Wyo. Filed May 4, 1883.

290,600. REFRIGERATING-CAR: Cassius C. Palmer, New York, N. Y. Filed Aug. 15, 1883.

290,602. RAILWAY-TELEGRAPH: William D. C. Pattyson, Marlborough, Mass., assignor of two-thirds to Horace S. Crowell and Edmund E. Bond, both of same place. Filed Jan. 22, 1883.

290,656. CAR COUPLING: Martin E. Swart, Denver, Colo. Filed Mar. 7, 1883.

BEARING DATE DECEMBER 25, 1883.

290,689. ELECTRO-MAGNETIC CAR-BRAKE: Richard Kampfe, Brooklyn, N. Y. Filed Sept. 14, 1882.

290,690. SEAL-LOCK FOR CAR-DOORS: Virgil A. Krepps, New York, N. Y. Filed Feb. 24, 1883.

290,703. RAILWAY HAND-CAR: John C. Perkins, Kalamazoo, Mich., assignor to George W. Miller and Horace G. Haines, both of same place. Filed Oct. 25, 1883.

290,710. VENTILATING CARS: Wm. Scott, Malden, Mass. Filed Mar. 13, 1883.

290,712. NUT-LOCK: Sumner Shaw, Boston, Mass. Filed May 2, 1883.

290,718. AUTOMATIC LOCOMOTIVE-WHISTLE ATTACHMENT: Jacob W. Strickle and Harry W. Manning, Huntsville, Ala. Filed Sept. 8, 1883.

299,720. CAR-STARTER: John A. True and Ebenezer Smith, Newburyport, Mass. Filed May 17, 1883.

290,723. AUTOMATIC CAR-BRAKE: Hanson S. Webster, Glensdale, assignor of two-thirds to John E. Mulford, New York, and Mortimer G. Lewis, Lowville, N. Y. Filed April 18, 1883.

290,746. SAFETY-FENDER FOR CARS: Patrick H. Cooney, San Francisco, Cal. Filed Sept. 11, 1883.

290,766. TIME-SIGNAL AND TRAIN-INDICATOR: Robert P. Garsed, Norristown, Pa. Filed Sept. 20, 1883.

290,770. RAILROAD-GUARD: Samuel Jefferson Gray, Fort Gratiot, Mich. Filed Sept. 19, 1883.

290,790. NUT-LOCK: Martin J. Nerney, Green Island, N. Y. Filed Nov. 1, 1883.

290,793. CROSS-TIE AND FASTENING FOR RAILROAD-RAILS: Lyman O. Orton, Philadelphia, Pa., assignor of one-fourth to Richard M. Popham, same place. Filed June 14, 1883.

290,842. RAILROAD-SIGNAL: Jonathan L. Booth, Rochester, N. Y. Filed March 23, 1883.

290,916. NUT-LOCK: Thomas M. O'Malley, Bellaire, Ohio, assignor of two-thirds to Arthur Gilmartin and John Deegan, both of same place. Filed Sept. 12, 1882.

290,924. CYLINDER-COCK STEAM-ESCAPE: John Harrson Porter, Jackson, Mich., assignor of one-half to John W. Twiggs, same place. Filed Oct. 26, 1883.

290,937. JOURNAL-LUBRICATOR: Martin L. Senderling, Jersey City, N. J. Filed Jan. 12, 1882.

290,938. CAR-AXLE: Francis P. Smith, Boston, Mass. Filed Oct. 15, 1883.

290,957. CAR-STEP: Horace S. Wolfe, Kalamazoo, Mich., assignor of three-fourths to William H. McCourtie and Chester Kellogg, same place. Filed May 26, 1883.

290,987. CAR-AXLE LUBRICATOR: Lyman D. Howard and Albert Chance, Philadelphia, Pa., assignors to the American Lubricating Company of New Jersey. Filed Sept. 21, 1882.

291,006. CAR-AXLE BOX: Peter Sweeney, New York, N. Y., assignor to James Augustus Hamilton, same place, individually and as trustee. Filed July 5, 1883.

King's Express Card-Holder.

THE inventor of the device illustrated in the accompanying cuts, is Dr. Fred King, of Atlanta, Georgia, who is also the patentee and owner of the same.

The directions for using the holder are very simple. On one side of the card is printed the address of the consignee, on the other, that of the consignor. The former on receiving the package reverses and re-inserts the card when it is ready for re-shipment. The body of the holder is made of malleable iron, while the face or covering over the name is of transparent mica. Hence the holder is indestructible.

(NO. 1.)

(No. 2.)

No. 2 is for use on freight cars, doing away with waybills, freight slips, etc.. No. 1 costs eight and a half cents each; No. 2 about thirteen cents each. When, No. 2 being in use, the card is reversed, it is marked or addressed back to the road to which it belongs. Dr. King's invention, simple as it is useful, needs no further description than that conveyed by the cuts. We may add that the express companies give it their unsolicited indorsement.

A CORRESPONDENT writing to an exchange, asks, "Why don't some of our mechanical geniuses invent an automatic mechanical firing machine?"

New Sand Guard for Railways.

T. W. STAPLETON, of Portland, Oregon, is the inventor of the ingenious appliance described in the following paragraph. He was foreman on a Western railroad for several years, and when acting in that capacity, devised his guard to prevent the sand which is carried along by the wind from accumulating on the track. He tested it thoroughly on the road where he was employed, but not in as perfect a manner as that patented, because he was anxious to secure his patent before he would apply it as patented, lest he might lose the benefit of his invention. The great advantage derived from its use is that the stronger the wind blows the more sand will it remove from the sand hill, and in case there is little sand to be removed it will insure a clear track at all times, at a very slight cost of labor. The cost of applying the guard is nominal, and it will last a great number of years. It is claimed that one man can do more work with this appliance than a hundred could do without it. The patentee has assigned his invention to John G. McBride, Portland, Oregon.

Briefly described, it consists of a series of boards pivoted at the sides of the track and supporting other boards, under which the wind passes, sweeping over the track and carrying the sand along with it. The rails are spiked to ties, placed the usual distance apart, which rest on longitudinal beams supported on sleepers that are embedded in the ground, which must consist of gravel or some other earth that cannot be blown away. At the ends of some of the ties are loops for receiving hooks on the ends of boards, the free ends of which rest on rails placed at the side of the track and parallel with it. These rails rest on horses placed at right angles to the track, and at the ends are provided with downwardly projecting pins, one of which is on each side of the top piece of a horse. On these rails are boards hinged to the ties or fastened in any suitable manner. The free ends of the boards may rest on the ground, instead of on the rails supported by the horses. In sand storms the sand gathers in ridges on each side of the track, encroaches on the track, and finally stops travel. The horses are then placed on top of the ridges, and are pressed down until they have a firm bearing, when the rails and boards are placed on them, the latter having their outer edges a certain distance above the sand. The boards are so arranged that their outer edges will be toward the direction from which the sand blows. The wind passes under the boards, and is conducted to the other side of the track, carrying the sand with it. The boards need only be large enough to direct the current of wind so that it will have the desired effect, and they may be applied to either side of the track.

McCarthy's Improved Railway Switch and Crossing.

THIS invention relates to railway crossings and sidings. Its primary objects are first, to provide a siding or crossing without cutting the rails of the main track, and in the second place to provide an automatic siding whereby the train whether running upon the main track or the siding may pass the points of the junction without liability to derailing. It was put into practical use in the New London Northern Railroad yard at Palmer, Massachusetts, before a patent was applied for, and has been in successful operation for the past three months. The advantages claimed for it are, that it leaves the main track entire and unbroken, dispenses with the use of frogs and guard rails, thereby avoiding the causes which tend to loosen the wheels and allow them to run off the track after becoming loose. By its automatic working it is impossible to get a train off the track, whether the switch and crossings be set for the main or side track. The cost of manufacturing the entire device will be less than the cost of some frogs now in use. It is exceedingly durable, as the wheels do not come in contact with any part of it, except when moving it automatically from one position to another, or when using the siding. Should it be left wrong by mistake, or otherwise, no loss of life, or damage to rolling stock can occur, as the first passing train sets the track right again. It is claimed besides that by this new arrangement all jar and noise caused by trains passing through frogs, guard rails, and switches are avoided, and that trains can be sent over the road at a greater rate of speed without fear of a loose wheel or of a loose guard rail letting it off at the frog.

Further particulars can be procured from D. McCarthy, or P. J. O'Connor, of Norwich, Connecticut.

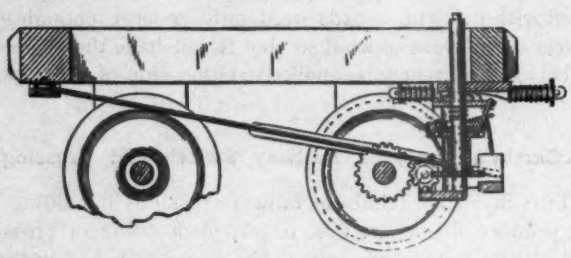
The Renouf Car Brake.

THE Renouf Car Brake is constructed on the principle of using the momentum of the car as the braking power.

George F. Renouf, Battle Creek, Michigan, the inventor, writes us that his brake is now in a shape to do its work on one or fifty cars, as it is applied to every car and is operated from the rear of the train, doing away with the danger of brakemen running over the train when it is covered with ice. Besides it is impossible at such a time, in case of extreme necessity, for the men to set sufficient

brakes to prevent accident. As Mr. Renouf is a practical railroad man, his opinion is entitled to weight, and when he claims for his brake that "it will do the work just as well as the air brake and is less likely to get out of order, is much less expensive, can be used on either passenger or freight cars, and furnishes its own power," sufficient reasons are given why the ground on which these great advantages are claimed should be examined.

The Renouf brake is geared from the axle, which operates it when in gear. Accompanying is a picture which, as assisted by a copy of the claim, will make the new device understood. The cut represents a longitudinal vertical sectional view of a car track, showing the new brake applied thereto.



The invention is (1) the combination, with the truck of a car, of the dependent frame, having journaled therein a vertical shaft, the gearing for rotating said shaft, the loose sleeve mounted on said shaft and connected to the brake beam by a rope or chain, and the mechanism for throwing the said sleeve into and out of gear with the shaft; (2) the combination, with the vertical shaft and the gearing for rotating the same, of the loose sleeve having a notched plate at its upper end, the guide plate secured to the shaft, the slotted plate having a lug at its lower side and an inclined pin on its upper side, the slotted guide plate and the vertically reciprocating plate having an aperture setting over the pin, the spiral spring and flat spring, and the slide beveled at its lower edge.

Improvement in Railroad Scales.

JOHN L. MERRILL, Pottstown, Pennsylvania, has invented an improvement in railroad scales, the object of which is to prevent the shocks that occur when a car is transferred from permanent rails to those on the platform of railroad scales.

In Mr. Merrill's invention the mechanism of the platform of an ordinary railroad scale is contained within a pit bounded by a quadrangular frame work composed of substantial end and side beams. The platform carrying rails are in line with but are necessarily detached from the rails of the permanent track; and the platform itself is supported entirely by the mechanism which determines the weight of a car and its contents. In order that the proper action of the scales may always be assured, gaps are provided between the ends of the rails of the platform and the ends of the permanent rails. When a car is transferred from the rails of the permanent track to those of the platform, severe shocks must always occur at the time when the wheels cross the said gaps between the rails, and these shocks must necessarily have a deteriorating effect on the weighing mechanism beneath the platform. In order to obviate this evil, Mr. Merrill bridges the gaps by extending the rails of the platform beyond the ends of the same, and beveling the extension to coincide with the beveled ends of the fixed rails. These projecting ends of the rails are never in contact either with the fixed frame by which the pit is bounded, or with the permanent rails, because the beam of the frame, to which is secured the permanent rail, is cut away beneath the projecting beveled end of the platform rail, so that when the platform is slightly depressed on receiving a loaded car, there can be no fear of the projecting ends of the rails coming in contact with the fixed frame. There is also a space of a quarter of an inch, or thereabout, between the beveled end of each platform rail and the beveled end of the adjoining fixed rail, so as to permit the slight longitudinal play of the platform which takes place when a car is transferred from the main rails to the platform rails. When the tread of a car wheel first comes into contact with the projecting end of the platform rail it is not free from contact with the permanent rail, and hence the transfer of a car from the permanent rails to those of the platform is accomplished without the shocks attending the transfer of the car on to the ordinary platform. In order to strengthen the projecting ends of the rail, Mr. Merrill secures to it a bar similar to an ordinary splicing bar; or there may be of such bars, one on each side of the rail.

Ball's Station Indicator.

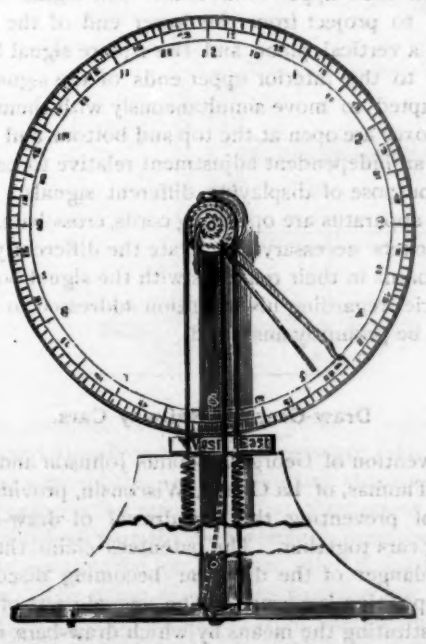
THIS device, by Charles O. Ball, of Lowell, Massachusetts, is designed to obviate the necessity of having the brakeman or conductor enter the car at every station to announce the same to passengers.

The exterior of the Ball Station Indicator consists of a case with a glass window or face large enough to exhibit the name of one station at a time; the interior contains two rollers, with a small gear at the end of each. These gears are rotated by coming in contact with a larger wheel, which in turn is rotated by means of a small ratchet and pawl. A wire or cord is attached to the pawl,

and passes through the car in a manner similar to the bell cord; and is attached to the pawl of the indicator at the other end of the car, and also passes through the end of the car to the outside, to which may be affixed a handle or knob of any kind. Thus, by pulling the cord from either end of the car, the names will both be changed at once without the necessity of entering the car. It may also be operated by a spring, if desired, which fact is stated in the specification. The names along the route are printed on a roll of tough paper or other material, and wound around the rollers. If a car goes back over the same route, all that will be necessary will be to move a small handle or pin, and the rollers will turn in the

opposite direction. After the wire has been pulled, it is brought back to its original position by means of a spring. If the car is to go over more than one rail road, the rollers containing the names can be removed, and others belonging to the new road substituted. The number of miles to the different places can be printed on the same slip with the names. As soon as the train leaves a station, the cord is to be pulled, and a small bell or gong is struck at the same time to attract the attention of passengers to the change of names, in order that they may have their small bundles and parcels ready to leave the car as soon as it stops. It may also be used to announce a change of cars. The advantages consist in changing the names in both ends of the car at once, and having but one cord pass through the car, and also in making no difference from which end of the car the cord is pulled. The interior parts can be made for three or four dollars, but the cost of the case would depend on its elaborateness. Further information may be obtained of the American Patent Agency, Nos. 188 and 190 Fifth Street, Cincinnati, Ohio, or of C. O. Ball, Lowell, Massachusetts.

Railway Time Signal.



EATHERTON & THOMPSON, Monticello, Piatt Co., Ills., are the patentees of an apparatus enabling fast trains to show a time-table at way stations and between stations at a long distance from each other. It consists of a clock dial divided into hours, minutes and seconds, and which has a time hand having a projection on its outer side near the end. A short shaft is journaled in a bearing at the top of an upright concentric with the clock dial, and an indicator hand is fastened upon the inner ends. A ratchet-wheel is fastened upon the outer end of the shaft, and is engaged by a pawl fastened upon the upright. The inclination of the teeth allowing the shaft and hand to turn in the same direction as the clock hand, a pulley around which a cord is wound, turns loosely upon the shaft, and when turned in the direction of the clock hand, a spring pawl engages the teeth of a ratchet wheel and turns it. When the ratchet wheel is revolved, the shaft and the indicator hand are turned until the latter strikes the projection upon the hand, when it remains stationary, allowing the pulley and wheel to turn further around. One end of the cord is fastened to a coil spring, and its other end to a lever which is operated by a movable rail or press bar at the side of the road rail. This rail has two vertical perforations for two upright rods to project into; and around these are wound two spiral springs which rest upon the bar frame and bar, with their upper ends against the under side of the bar.

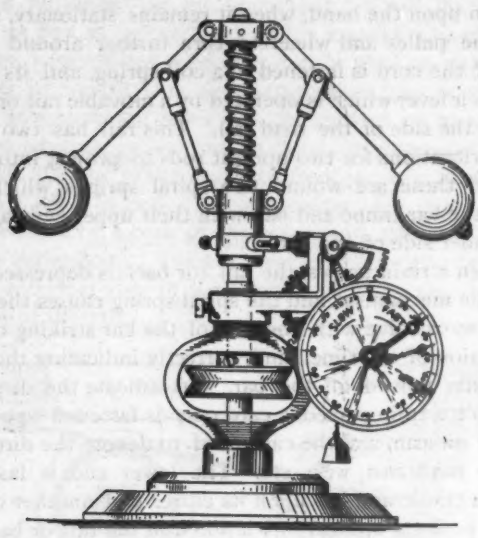
When a train passes, the rail (or bar) is depressed, setting the mechanism, and the spiral spring causes the indicator to revolve with the rise of the bar striking on the projection of the time hand, correctly indicating the time the train moved off the bar. To indicate the direction in which a train passed, a card case is fastened upon the end of an arm, and the card used to denote the direction of the road, east, west, etc. The lower end is fastened upon a crank, and has upon its either end another crank, which projects upward into a notch in the rail or bar, and is tilted by the flanges of the car wheels as they pass over it; which again tilts the arm and throws that card to view which bears the direction of the train.

A New Nut Lock.

RAILROAD men in Troy, New York and vicinity are much interested in a new nut lock, the invention of Mr. J. Nerney, of Green Island, New York. It consists of a washer having on its outer face or surface, four raised lugs, to form a nut seat for any ordinary nut, said washer having besides on its periphery a series of cog teeth of an equilateral triangle shape, so closely connected as to secure a lock at each short turn of the nut. The front end of the pawl is weighted and provided with a notch to fit approximately between the engaging teeth of the washer, while the other or pivoted end of the pawl is riveted to the fish plate. When the nut and washer are screwed home on the plate, the broad head of the rivet (after the pawl is dropped into place between the teeth of the washer), is hammered and impinged to the end of the pawl, thereby preventing the same from rebounding out of place during the shock or vibration of passing trains. We are informed that the device described was placed on the Troy Union track, north of the depot, last April, and notwithstanding the fact that one hundred and forty trains a day passed over it on a loose yielding tie, it has not permitted the nut to turn backward a single thread on the bolt. It has become absolutely cemented to the plate, and no shock or percussion of the wheels is sufficient to displace it. By the application of a wrench, however, and a slight turn of the nut forward, the lower engaging tooth starts the pawl upward, when the nut and washer may be instantly removed from the bolt.

THE railroad ticket press and holder for card tickets, invented by John Loudon, Big Rapids, Michigan, consists of a frame large enough to admit a bunch of card tickets, and just wide enough for the ticket, with a screw running the whole length of it with a plate, same as in the letter press, with a groove in it also at bottom of frame to admit of a string to go around the tickets.

Blanchard's Speed Indicator.



THE above cut illustrates a small but reliable piece of mechanism, designed to supply a long-felt want in our various manufacturing establishments, viz.: something that would at all times show with certainty, whether the shafting, machinery, engine, etc., is running at the proper speed.

Manufacturers and mechanics well understand how desirable it is to have their machinery run at a certain speed, both for economy and effectiveness.

The device consists of a small "Ball Governor" and dial, with suitable mechanism for moving the hand or pointer, according as the balls are lifted or lowered by the speed imparted to them by the shaft or machinery to which it may be belted.

So long as the proper speed is maintained, the hand will point at O, but any deviation will instantly be shown by the hand moving to "fast" or "slow" as the case may be.

Being portable, and needing but a small band to drive it, it can be put in any desired position and is always ready, like a clock, to show at a glance at just what speed the machinery is running.

Manufacturers, engineers and overseers who have seen it, speak very highly of it, and several parties have ordered a number of them, so as to place one in each room of their factories. It has been patented in the United States and Canada, and will no doubt meet with large and rapid sales.

For further information, State rights, etc., interested parties can address the inventor, Thomas Blanchard, Stoughton, Massachusetts.

New Improvement in "Block" Signaling.

THE railway signal devised by George F. Carlile, of Bloomington, Illinois, upon which letters patent were issued from Washington December 4, 1883, is an invention of more than ordinary importance. Advantages claimed for it are simplicity and cheapness, durability and adaptability to all places where signals are used. In operating it, any kind of illuminating substance can be used, and the number of signals which can be displayed from one signal is unlimited. It provides that the light displayed does not move, but is perfectly steady, being protected absolutely from the weather. Moreover, the glasses are protected against dirt. Any number of tracks can be operated by one signal. Day signals, by Mr. Carlile's system, are made to stand either horizontally or perpendicularly, as may be desired.

As indicated in the title of this article, the invention relates to that class of signaling devices known as the "block" system for governing the movement of trains, the road being divided into sections and the signal apparatus being so placed as to control each section in regular order.

The apparatus is a combination, with an outer inclosing rectangular case, provided with transparent openings at the lower end and a cap and escape tube at the upper end, of a rectangular metallic flue arranged centrally on the inside of said case, this flue being provided with corresponding openings and forming a receptacle for a stationary lamp, and square signal boxes arranged one within the other, inclosing the flue, and adapted to have a vertical movement on the interior of the above-mentioned inclosing rectangular case. Combined with this case are also signal boards adapted to have a vertical movement within it, and provided with the before-mentioned square signal boxes on their upper inner ends. The signal boards are adapted to project from the lower end of the inclosing case in a vertical plane, and the square signal boxes are secured to the interior upper ends of the signal boards and adapted to move simultaneously with them. These signal boxes are open at the top and bottom, and arranged to have an independent adjustment relative to each other for the purpose of displaying different signals. Completing the apparatus are operating cords, cross bars, sheaves, and brackets necessary to operate the differently-colored signal boards in their relations with the signal boxes.

Inquiries regarding his invention addressed to Mr. Carlile, will be promptly answered.

Draw-Gear for Railway Cars.

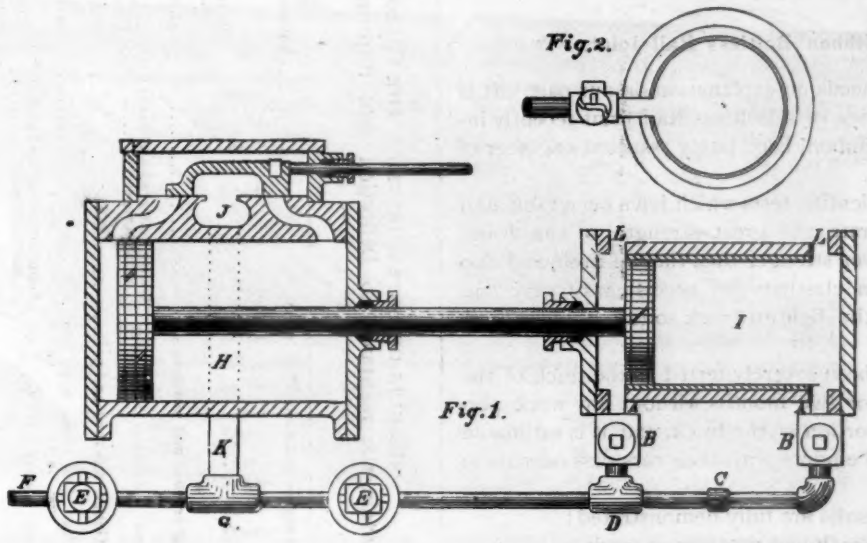
AN invention of George Josephus Johnson and Eugene Howell Thomas, of La Crosse, Wisconsin, provides a new means of preventing the withdrawal of draw-bars for coupling cars together. The patentees claim that by its use all danger of the draw bar becoming disconnected from its position is averted. The several parts of this device constituting the means by which draw-bars connecting cars together are prevented from being pulled or drawn out, may be made of any material found suitable, such, for instance, as steel, brass, wrought or cast iron, and the like. They are described in detail in the specification forming part of letters patent No. 290,241.

ALBERT H. GLEASON, of Wabash, Indiana, has invented and patented a light-running and almost noiseless rotary engine. It has a skeleton piston of minimum weight, and its lever power is preserved at a maximum. The engine has but two slides, each with an independent action. Its inlet and exhaust ports are close together, enabling the pressure of a given amount of steam to be utilized for a greater length than can be done in rotary engines where the inlet and exhaust ports are at a greater distance apart.

Utilizing the Exhaust of Steam Pipes.

MESSRS. ROBIE AND LYONS, of Portsmouth, Virginia, have patented the means of accomplishing this result. We append a description and illustrate the process of their invention.

In the above sketch, Fig. 1 represents a horizontal section of a double-acting steam pump, with the invention for utilizing the exhaust steam attached. Fig. 2 is a vertical section of one end of the pump cylinder, showing position of the check valve, opening into the cylinder. In Fig. 1 the exhaust pipe K, from the steam cylinder, branches at G, one branch extending to D, and the other to the atmosphere. Both of these branches are fitted with stop valves E E. At D the exhaust branches into each end of the pump cylinder, and in these branches are placed the check valves B B, with their delivery opening into the pump cylinder. In operating a pump with this



invention attached, close the low pressure valve E, between G and D, and open the high pressure valve E, leading to the atmosphere. After admitting steam and working the pump a few strokes, to get the current of water fully established, partially close the high pressure valve E, and while opening the low pressure valve E, finish closing the other. The pump will then be working low pressure. Suppose the pump to be, as shown in sketch, on its center, then the pump cylinder I, will be partially full of water, lying in a vacuum, produced by the stroke of the piston. At this time the steam in the cylinder H, which has forced the piston to the end of the stroke, commences to exhaust, and it passes into the pump cylinder through the check valve B, opening into I, and is instantly condensed by contact with the water in the pump. When the piston commences its return stroke, as soon as the water is compressed in I the check valve at B is closed by the pressure on top of it, and the vacuum formed at the other end of the cylinder allows any uncondensed vapor remaining in the exhaust pipe to pass through check valve B, leading into the pump at A. The advantages gained by using this invention are evident to any one acquainted with steam. When used for feeding boilers, the pump is as economical as an inspirator, for the heat required to give the necessary power to work the pump is returned directly to the boiler through the feed water, giving a higher temperature to the same, and preventing the injurious effects of the feed water entering the boiler cold. By actual test before an examining board, water was taken into the pump at 45° and discharged from the pump into the boiler at 145°, making a gain of 100° of heat by using the invention of Robie and Lyons. This invention is also very important when attached to pumps used for pumping water into tanks at railroad stations. To illustrate: Suppose the pump is taking water at a distance of 20 feet below it. In this case the pump would have to form a vacuum of 25 feet at least to produce a sufficient flow of water into the pump. The exhaust then from the steam cylinder has a ready formed vacuum of 25 feet to exhaust into, which will give an extra pressure on the steam piston of about 12 pounds per square inch, due to atmospheric pressure, and this extra pressure gives a large percentage of gain in power, produced by attaching this invention. Again, in the North and West, in the winter, the water often freezes in the pipes. This can be entirely prevented by running the pump slow and heating the water to a high temperature before it leaves the pump. This invention can be readily attached to the different kinds of steam pumps by simply tapping a nipple of the desired size into each end of the pump, avoiding the lining of the pump, and connecting check valves and exhaust. By closing the low pressure valve and opening the high pressure, the pump will work in the ordinary manner.

THE estimated savings of the Chesapeake and Ohio Railroad for December, 1883, were $324,527.24, an increase of $71,171.52 over December, 1882; estimated earnings from January 1 to December 31, 1883, $3,924,934.30, an increase of $589,957.29 over 1882. The estimated earnings of the Elizabethtown, Lexington and Big Sandy Railroad for December, 1883, were $52.695.14, an increase of $5,604-.93 over earnings in December, 1882. During the year 1883, the road earned $714,267.96, an increase of $184,-949.25 over the amount earned in 1882.

Track-Laying Machine.

FULL details of the new track-laying machine invented by Ferdinand F. Voigt, of Walla Walla, Washington Territory, have been sent to this office. We have not the space necessary to their publication to spare, and refer our readers to the patentee for particulars. All we can say is, that Mr. Voigt's invention relates to the class of track-laying machines in which a peculiar car, provided with the necessary apparatus for handling the material, is joined to and made to precede a construction train carrying the material. It consists in a novel means for carrying the material to the front, in a novel means for handling the cross ties and rails, in a novel means for switching the material trucks to avoid interference, and in certain other details of construction. The object of the invention is to lay a railroad track with facility and dispatch, thereby economizing time and labor.

The Gibbon Boltless Rail Joint.

THE above cut needs no explanation on our part. It is a comprehensive view of a Boltless Rail Joint recently invented by T. H. Gibbon, Esq., lately assistant engineer of the D. & H. C. Co.

The following scientific tests which have been tabulated for us, fully illustrate the great strength of the Joint, showing it to be even stronger than the rail itself, and also to possess uniform elasticity (so necessary to easy and safe travel) from the lightest truck to the heaviest locomotive.

The Joint has been severely tested in the track of the D. & H. C. Co. for five months without any work performed on that portion of the track, and it is estimated that three hundred engines with their cars pass over them every day.

The following results are fully demonstrated:

1. It makes a smooth and continuous track.
2. It removes the possibility of low joints. (The track is as level as when first laid).
3. The track can neither spread nor creep, and any amount can be given for expansion.
4. This joint removes all labor of raising low joints and screwing up loose bolts.
5. The spikes are as firm as when first driven.
6. Two miles of track can be laid with this joint quicker than one mile with any other joint.
7. A broken rail can be spliced with this joint in twenty minutes, with two men, maul, and chisel.
8. The strongest and cheapest joint manufactured, besides saving about 1500 lbs. of steel to every mile when purchasing rails at mill.
9. Mr. Thomas H. Gibbon, lately assistant engineer of the above-named company, has had fourteen years' experience in roll mills as inspector of steel rails for the D. & H. C. Co., and he finds that the rails can be cut for this joint by simply placing two additional saws on the same collar, which will cut the head of the rail at the same time as the ends. The punching machine which is now used for slotting the flange of the rails for the spikes, is used for taking the head of the rail off, thus saving time and avoiding the weakening of rails by drilling for bolts and nuts.

RESULTS OF EXPERIMENTS OF THE GIBBON BOLTLESS RAIL JOINT.

Messrs. Fairbanks & Co., Dept. of Tests and Experiments, New York, A. V. Abbott, Esq., Engineer in charge. — To ascertain the resistance to Deflection and Rupture, under a gradually increased bending Stress. — Nov. 20th, 1883.

Test No.	Weight of joint.	Steel Rails 62 lbs. pr yd	Stress in lbs.	Deflection in inches and decimal of inches.																		Ultimate. Stress. lbs.	Span in inches.	Remarks.
			1,000	5,000	10,000	15,000	20,000	25,000	30,000	35,000	40,000	45,000	50,000	55,000	60,000	65,000	70,000	75,000	80,000	90	100,000			
440	23 lbs.		Gauge Set.	.100	.200	.287	.335	.525	.600	.810	Casting cracked and pressure amounted to.....											42,700	28	Revealing blow-holes in casting.
487A	29 lbs.			.102	.180	.228	.300	.410	.540	.625	.720	.825	.965	1.040	1.150	1.275	Gauge removed and pressure increased					75,000	Tie in Sand.	No sign of failure of joint.
487B	29 lbs.			.150	.300	.335	.425	.475	.550	.600	.800	Gauge removed and pressure increased to.....										66,500	20	When joint cracked slightly.
488A	29 lbs.			.155	.267	.330	.390	.465	.530	.530	.600	.625	.656	.700	.735	.780	.835	.950*	1.025	1.45.....		104,000	20	* Test discontinued, no failure of joint. *No tie under the joint. Joint failed, by tearing the bottom of the rail from the web, and by cracking both rails through the head at a distance of 17½ inches.
488B	29 lbs.			.125	.225	.330	.440	.530	.620	.666	.765	.875	1.020	1.175	1.600	2.800	Gauge removed and pressure increased to.....					67,090	40 Span.	same joint.
																						4)280,290		
																	As a suspended joint.....					70,072 lbs.		
489		62 lbs.		.160	.200	.230	.280	.320	.450	1.020	2.350	Gauge removed and pressure increased to.....										42,590	40 Span.	Rail completely failed.

*Thus proving the Joint strengthens the Rail 25,000 lbs. at its weakest part, viz., the Joint.

CONCLUSIONS OF A. V. ABBOTT'S REPORT.

The heaviest locomotives of the present day rarely, if ever, are built to give a load of more than 10,000 lbs. on a

single driver. If this load be doubled to allow for a severe case of impact, due to high speeds, a load of 20,000 lbs. is obtained as the maximum stress that can be placed on a rail joint at any time.

An inspection of the foregoing tests gives the following factors of safety under different conditions in the case of the Gibbon Joint, used as a suspended joint, with the ties placed twenty inches apart. A load of 104,000 lbs. (fifty-two tons) was sustained without any signs of failure of the joint, thus giving a factor of over 5. (Test discontinued).

In experiment 487, with ties set twenty inches apart, and the middle tie support on a yielding foundation of sand, a load of 75,000 lbs. was supported without failure, giving a factor of nearly 4. (Test discontinued).

In experiment 488 B. The joint with a span of forty inches (no tie under the joint) failed under a load of 67,090 lbs., giving a factor of over 3, under circumstances as unfavorable to the joint as may be supposed to occur when the ballast of the track has been washed away from the ties adjacent to the joint.

Furthermore, in this test, the rails themselves failed at the same time as the joint, showing that under such circumstances, at least, the joint was as strong as the rest of the track.

From the above conclusions it may be safely asserted that the Gibbon Joint is strong enough to do all the work that may be expected from a railway splice, under even very adverse circumstances.

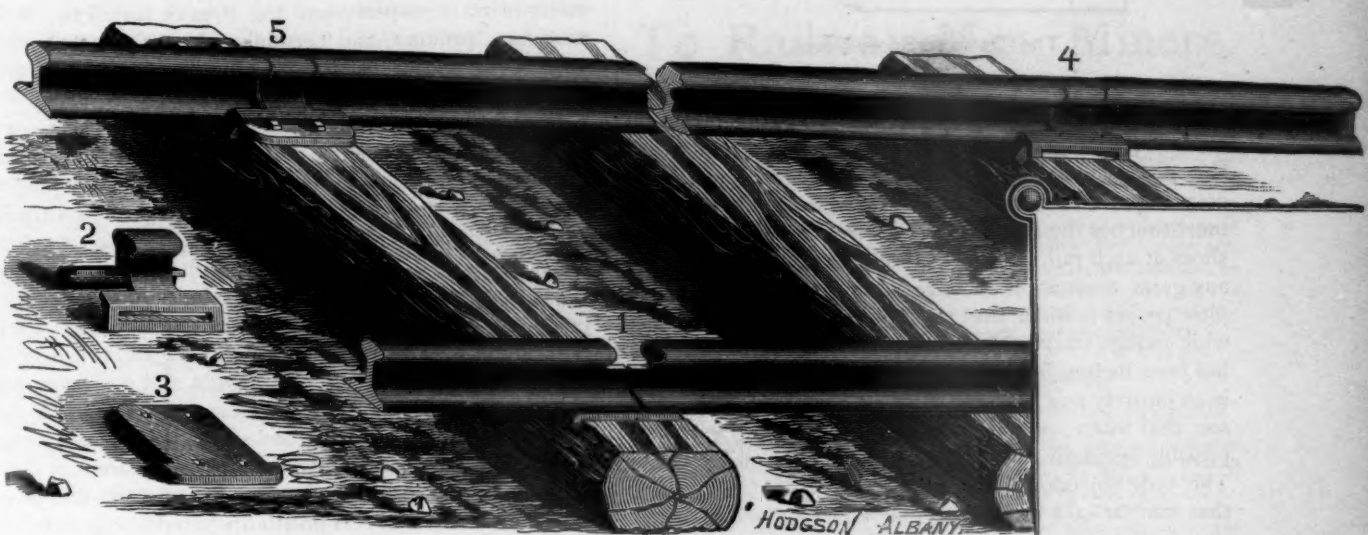
The steel castings that were used in these tests were remarkably soft and ductile, so that there need be no apprehension that such castings would wear unequally with the rails.

The joint, therefore, would seem to be eminently adapted to do the work for which it was designed, and to obviate many of the objections to the present systems.

Grate Bar for Locomotives.

THE objects of the grate bar for locomotives, recently patented by Isaac W. Swallow, of Kingston, Pennsylvania, are to produce a grate for locomotive engines, which, while serving as a grate, may at the same time be operated to clean and remove the ashes from the bottom of the fire without injuring or weakening it, and without the necessity of opening the fire box, and while the engine is raising steam, thus preventing a wasting of the volume of heat in the furnace, and a reduction of the amount of steam while cleaning and renewing the fire; in so arranging the tumbler-bars that the fire may be cleaned along the side walls and in the corners as well as in the middle of the fire box, thereby enabling the operator to keep the fire at the sides and corners in the same condition as in the middle, which is of great importance from the fact that there is where the greatest amount of steam is generated, because nearer to the water pipes, and the place under the present system where the fire dies out first and is the most difficult to renew.

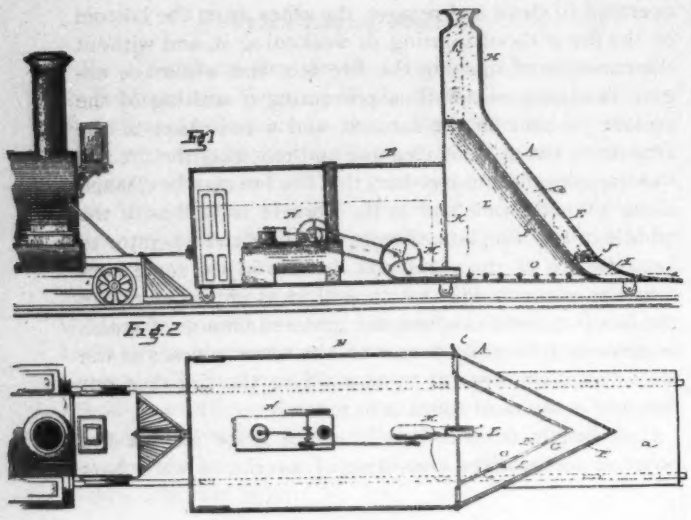
It is briefly described to be a fire grate for the fire boxes of locomotives, consisting of a series of water bars and movable tumbler bars extending longitudinally of the fire box beside and parallel with the water bars, and arranged to be operated from the exterior of the fire box by a shaking-rod, and its connections to raise and lower said tumbler bars on curvilinear lines, and thereby remove the ashes from the bottom of the fire, from its sides, corners and middle.



The construction of this grate bar is so arranged that in case any part becomes worn out or broken it will take but a few minutes' work to replace it with a new one, as it is only necessary to take off two or three nuts and remove the bolts to get out any part of the several pieces. The fire can be stirred or cleaned while the locomotive is in motion without reducing the amount of steam, as the whole operation is performed in a few minutes by the use of the shaking-lever. It saves the furnace man or operator from a great deal of exposure to the fire, because it dispenses with the necessity of opening the door of the fire box, except to add fuel. It will work in hard or soft coal burners, and will save fuel, because it removes the ashes only, and saves the good fire and unburned coal.

Particulars as to the cost of the new grate bar, etc., are procurable from the inventor and patentee.

FORTUNE often rewards with interest those that have patience to wait for her.



The Dawson Snow-Plow.

THE above cuts show an entirely new and different plan of operating against snow on railroads. In this invention the calculation is to have the plow come in contact with the snow by gradually pushing it into the bank by the locomotive. The square shovel at the extreme point almost touches the rails, but is kept from actual contact by shoes at each rail. These are not so large as to allow of any great amount of snow remaining on the rails. The plow proper is wider than the tender or cars, allowing a wide enough track for cars to pass through, after the same has been melted by the plow. The plan of melting snow is an entirely new one, and must be effective for the reason that when snow is once reduced to water, it cannot possibly again give trouble by drifting back on the track. The only objection which has occurred to the inventor that can be said against his plan and its mode of operation is, that the water made by the melted snow may, in deep cuts, form ice at the rails. This, however, can be overcome by having a receptacle at each of the outside rear corners, under the plow at c c, Fig. 2, for the purpose of catching the water, to which may be attached a pump operated by the small engine on the plow tender. By this means the water may either be pumped into the tank of the tender, or forced far enough from the track as not to cause an obstruction. The plow is calculated to be made of the very heaviest of boiler iron, or cast, as engineers may determine; and of course will be so heavy, when fixed up, that there will be no danger of its jumping the track when running at a good speed where there is no snow to melt. Where there is work for the plow to do, it is to be pushed in as fast as the snow will melt, and this may be regulated by the amount of fire put into the receptacle. There is plenty of space for this purpose, the calculation being to have not less than twenty-four inches of space between the air chamber and the outer wall of the plow for fuel. This space extends to the top of the plow, at the smoke stack, back to the rear, where the tender or fan is located. There can be no limit to the amount of heat, as the operator of the plow can keep the fan blast at as high rate of speed as he wishes, and can use any kind of fuel he sees fit.

In case the plow is not needed, after going through a large drift, it can be damped down. As the inner chamber is perfectly air-tight after the doors are shut, and blast is shut off, there cannot be any possibility of getting this plow stuck in a snow bank, for should the fire not be sufficient to melt the snow, and should it become packed in front of the plow, by remaining still for awhile and putting on more blast, it would soon free itself. The tender of the plow is constructed to carry coal for both the plow and stationary engine, and also a water tank for the stationary engine.

The snow plow above described is for sale by E. C. Dawson, Maquoketa, Iowa.

The Railway Switch.

IN the superstructure of the road-bed of a railroad, there is, perhaps, no part of more vital importance than the switch, as upon it depends, to a great extent, the safety of train property and the lives of travelers. It is, therefore, prudent, and certainly economical, that such switches should be used as will prevent loss of life and property.

Many railroads use switches which always leave open tracks, that are constantly liable to cause loss by trains running through them. Misplaced switches are chronicled frequently as the cause of trains running off the track. These events are called accidents when, really, accident has nothing to do with them. Neglect, and neglect only, is the cause of them. The switchman, though humble in position, occupies a very responsible station, for on his faithfulness also depends to a great degree, the lives of travelers and the property of railroads, and it is necessary that good and trustworthy men should be employed for the purpose; but, however good and faithful a switchman may be, there is a possibility that, from some want of care, loss will be caused. It is not only prudent, but it is positively necessary that this possibility should be guarded.

A new switch invented by John T. Rigney, of Baltimore, Maryland, is described as one over which trains can run without the fear of getting off the track in consequence of its being misplaced or the track being open. This device is placed in one side of the track only and consists of a main rail which forms a part of the track. On the outside of this rail, and parallel with it, is a protection or safety rail which meets and forms a connection with the siding rail. On the inner side is a pointed rail or frog point equidistant from the main rail with protection rail, and a guard rail extending from a little beyond the point of the frog to or beyond the heel end of the switch, where is a pivot in the main rail on which the switch is turned. All these parts are securely fastened together by spacing pieces and bolts. When the switch is turned for the siding, the main rail takes the place of the protection rail and fits to the siding rail, and the frog point fits to the main rail and forms a direct line with it. Opposite the switch, the other side of the track is securely fastened down. The rail of the siding is pointed and also fastened, the point being placed at about opposite that of the frog point of the switch. A guard rail is also used here, extending from a distance beyond or parallel with the head of the switch. These parts form a frog opposite the switch with broken joints so as to prevent the churning of cross ties, which is often produced when joints are opposite on the same tie.

This side of the track is the guide of all wheels passing over the switch in the opposite direction and controls their course, so that when the switch is fixed for the main track, if a car should run down the siding, the wheels on the switch side will gradually rise on the protection rail until the flanges pass over and the wheels drop and continue on the main track; and, when the switch is set for the siding, if a car should run down the main track in the opposite direction, the wheels on the switch side will run over the frog point (the flanges pass between it and the guard rail) and continues on the main track.

Mr. Rigney has, in connection with his switch for one track, arranged it for three or more tracks upon the same principle, putting one in each side of the track. For three tracks the switch has two protection rails on the outside and two frog points and a guard rail inside. In this way he protects all the tracks at all times, and cars must continue on the track in whatever position the switch may occupy. This is a great feature, as many double switches now in use leave two open tracks on each side.

The Rutter Refrigerator Car.

THIS improvement, invented by Levi Rutter, of Newmanstown, Pennsylvania, provides in a refrigerator car, a bottom with slits and inclined plates below said slits. The walls of the ice receptacle form with the inclined plates, a double check for the water. Below the slits and inclined plates are inclined troughs having curled edges and provided with a waste pipe coiled in the car; also with exhaust pipes operated by the movement of the car, and withdrawing air at or near the bottom of the car, which is closed.

Do business, but be not a slave to it.

THE LAKE SHORE RAILROAD COMPANY,
TREASURER'S OFFICE, GRAND CENTRAL DEPOT.
NEW YORK, Dec. 26, 1883.

THE BOARD OF DIRECTORS of this company have this day declared a Quarterly Dividend of two per cent. upon its capital stock, payable on FRIDAY, the first day of February next, at this office.

The Treasurer's Books will be closed at 3 o'clock, P. M., on Monday, the 31st inst., and will be reopened on the morning of Tuesday, the 5th day of February next. E. D. WORCESTER, Treasurer.

BUILDING PLANS. If you are thinking about building a residence (cheap or costly), or any kind of structure, from a public building to a barn, or of remodeling an old house, send for our circulars. *Building Plan Association, 24 Beekman Street, N. Y.*

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CONDUCTORS, ENGINEERS,

and others subject to the constant jar of the cars, who find themselves becoming nervous, with weakness of the kidneys, etc.; travelers and others exposed to sudden changes of temperature and climates, and who are liable to coughs, colds, lung complaints, rheumatism, malaria, and contagious diseases, will not only find our Magnetic Belt a CURATIVE but also preventive of these ills. They keep the blood pure, rich, and healthful, by giving it iron, magnetism and electricity—which are the life of it, as well as imparting tone and vigor to the nerves and strength and hardness to the muscles—thus keeping the system in its normal, healthful condition.

READ THE EVIDENCE.

CHICAGO, ILL., Nov. 7, 1883.

Magneton Appliance Co., Chicago, Ill.:

GENTLEMEN:—I am prompted to make this public acknowledgment of the wonderful merits and curative properties of your Magnetic Belts, from the great relief and benefit obtained by using one for the past year. If any class of people suffer from kidney disease it is railroad engineers, occasioned by the continual jar of the engine. I have suffered many years with Kidney and Liver disease, Rheumatism, and great exhaustion and nervousness. Now I feel like a new man, so great is the change in my health. I doctored with some of the best physicians during those years, who dosed and drugged but did not cure me; but I am free to state that your Magnetic Belt is the best and cheapest curative agent in America. I feel like a new being in every respect, and I shall use my influence in behalf of your admirable Appliances. I wish every railroad engineer in America that is troubled as I have been, would try your belt.

Yours truly, H. L. SEAVER,
Engineer Illinois Central R. R.
Residence, 1228 Indiana Ave.

CHICAGO, ILL., Jan. 24, 1883.

To Whom it may concern:

Up to within four months ago, I have spent upwards of fifteen hundred dollars in trying to cure myself of rheumatism. I have made trips to the Hot Springs and different resorts throughout the country, all of which furnished me no relief. Four years ago I purchased a Belt, Lung Protector and Insoles from the Magneton Appliance Company, and have not had any rheumatism since wearing the appliances, which is the first time in five years I have been free from it.

Yours truly,
J. P. PUTNAM, Conductor I. C. R. R.

P. S.—Mr. Putnam is conductor on the Illinois Central Railroad, which position he has filled the past fifteen years.

We can give thousands upon thousands of names who will endorse the above testimonial.

Price of Belt with Magnetic Insoles, $10, sent by express C. O. D., or by mail on receipt of price.

In ordering send measure of waist, and size of shoe.

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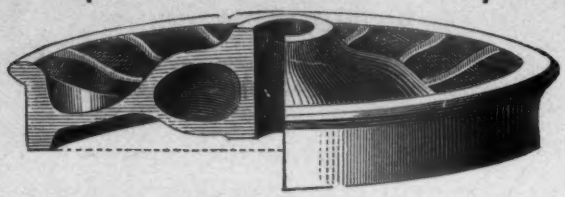

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Hazelton Car Works, Hazelton, Pa.
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Mansfield Machine Works, Mansfield, Ohio.
Muskegon Car and Engine Works, Muskegon, Mich.
Ohio Falls Car Co., Jefferson, Ind.
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Portland Locomotive Works, Portland, Maine.
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Rogers Locomotive and Machine Works, Paterson, N. J.
Schenectady Locomotive Works, Schenectady, N. Y.
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Wm. Sutton, Supt. Brownell & Wight Car Co., St. Louis, Mo.

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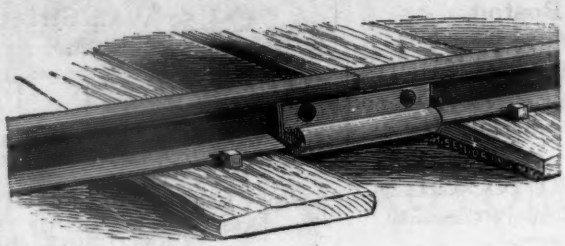

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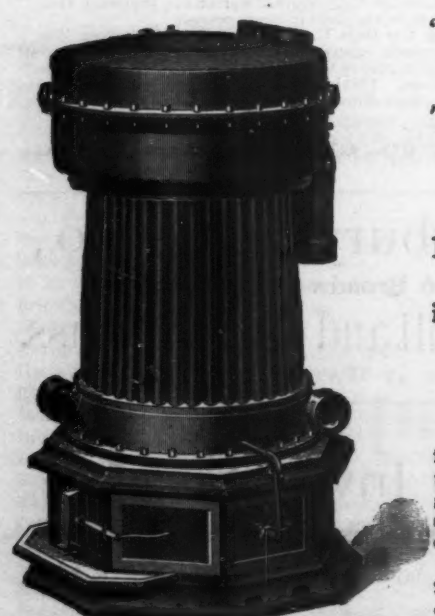

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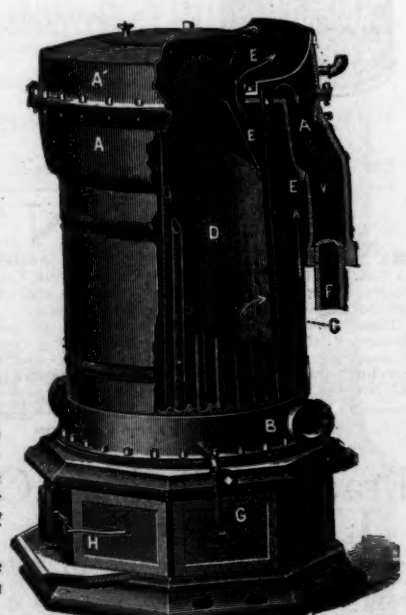

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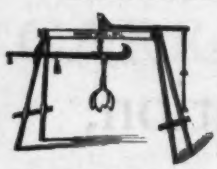

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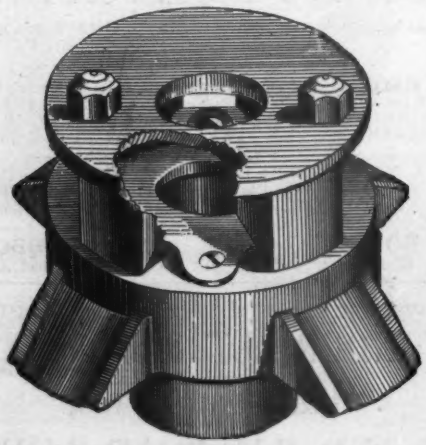

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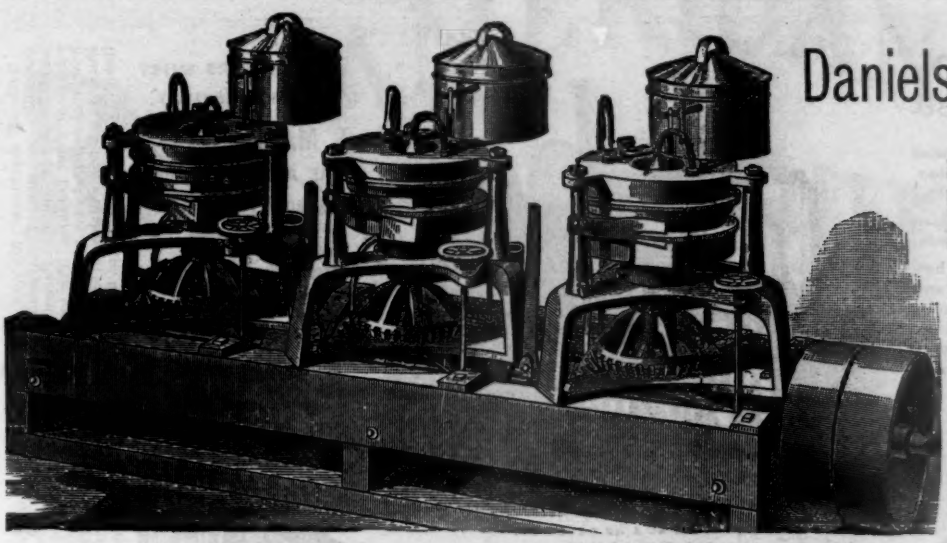

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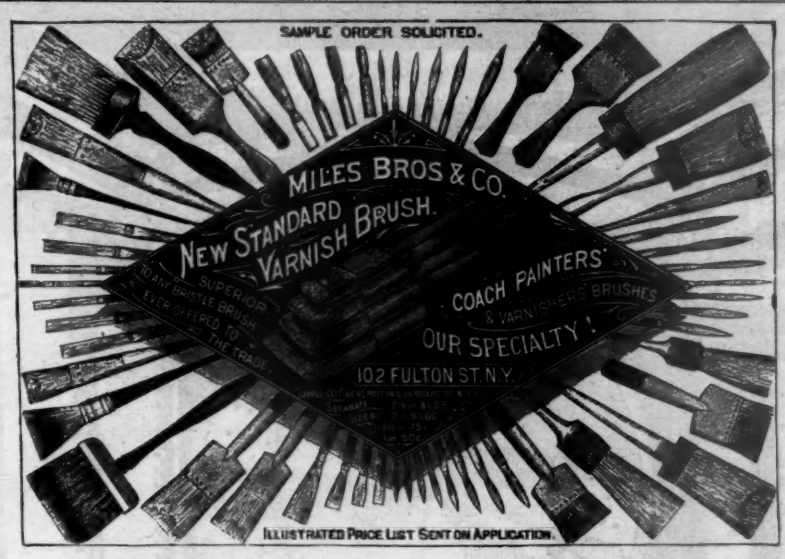
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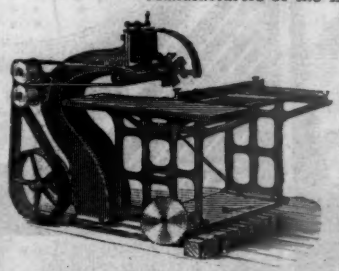

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